MENTAL HYGIENE NUMBER

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Nutritional Anemia in Infants

THE iron stored in the infant's liver at birth is rapidly depleted during the first months of life (Mackay,[1] Elvehjem[2]). During this period the infant's diet contains very little iron—1.44 mg. per day from the average bottle formulae of 20 ounces, or probably 1.7 mg. per day from 28 ounces of breast milk (Holt[3]). For these reasons, and also because of the low hemoglobin values so frequent among pregnant and nursing mothers (Coons,[4] Galloway[5]), the pediatric trend is constantly toward the addition of iron-containing foods at an earlier age, as early as the third or fourth month (Blatt,[6] Glazier,[7] Lynch[8]).

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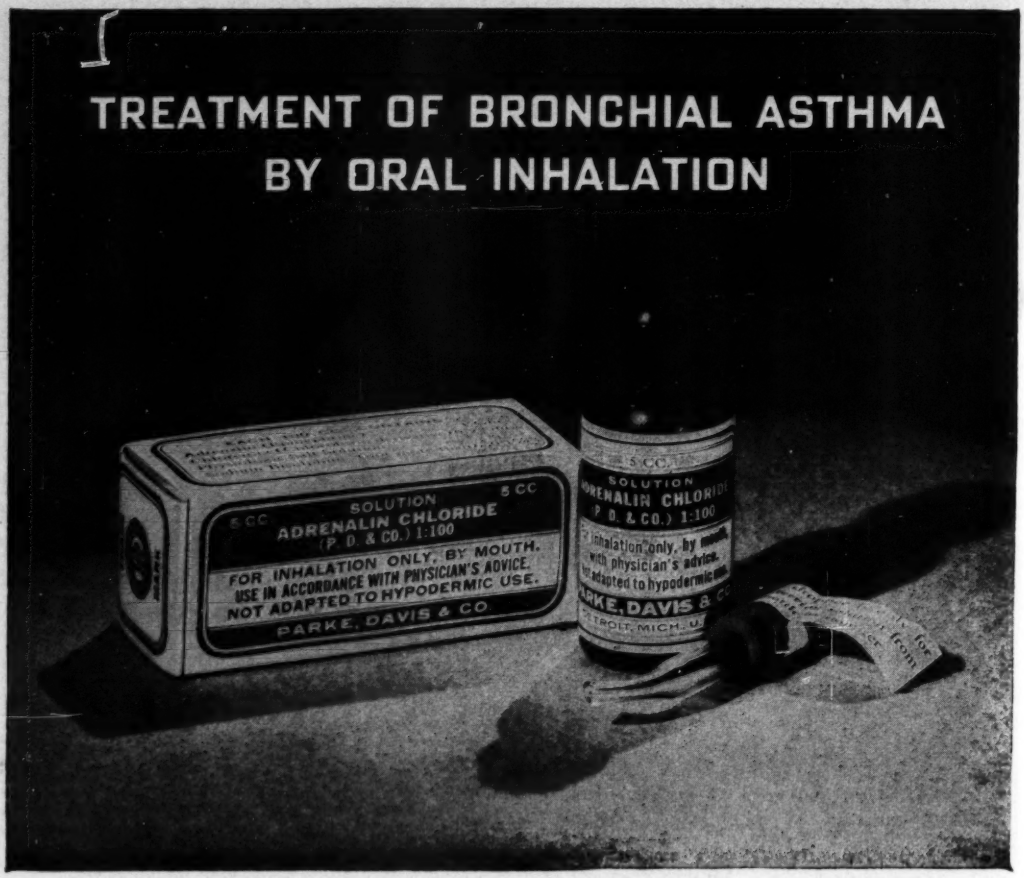

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In commercial canning practice, certain operations—specifically the blanch—may aid in elimination of gases from raw food tissues. However, main dependence is placed upon what are known as "exhausting" or "preheating" operations, not only to expel gases from raw foods, but also to exclude air from the can.

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(1) Appertizing or The Art of Canning", A. W. Bitting, The Trade Pressroom, San Francisco, 1937.

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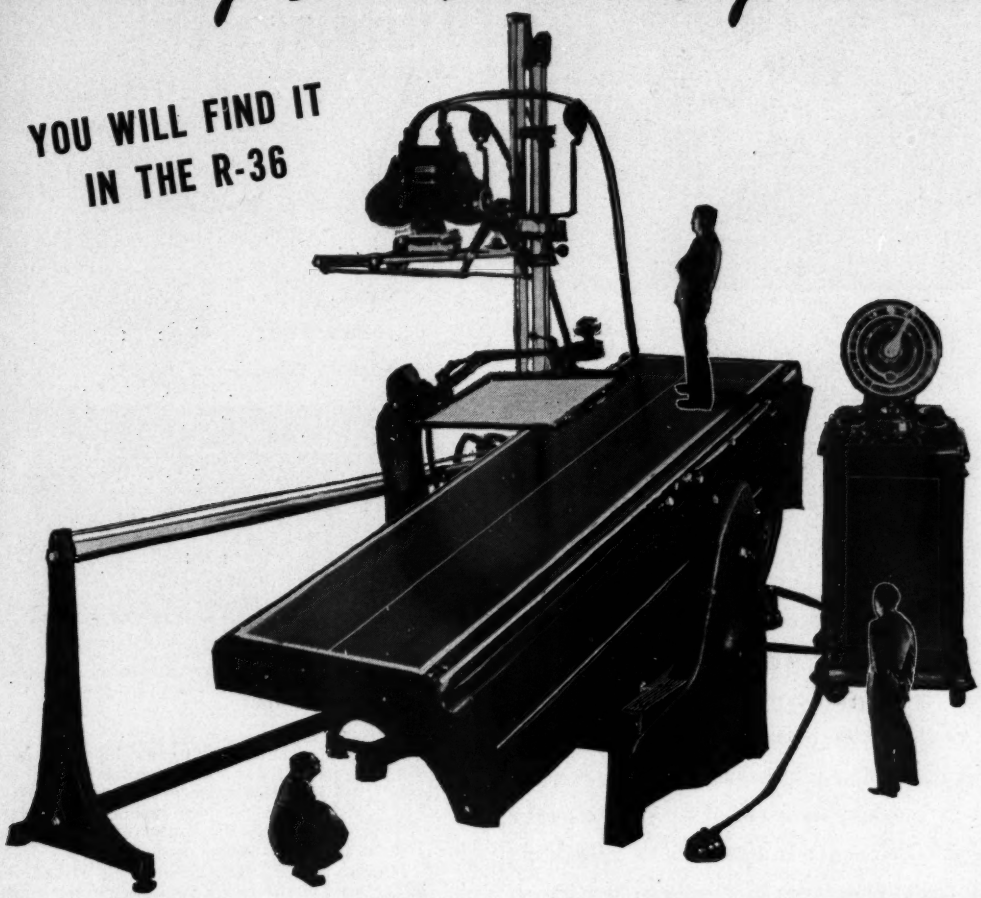

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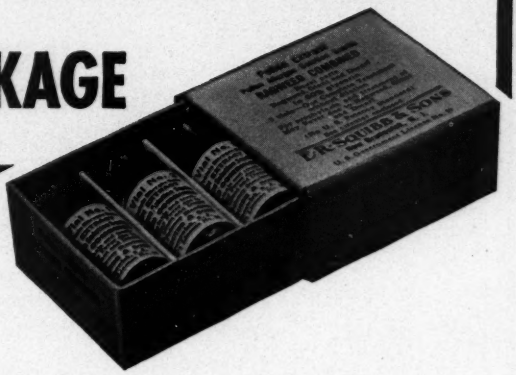

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MATURE APPROACH TO CHILD TRAINING

M. A. TARUMIANZ, M. D.,*
Farnhurst, Del.

The importance of the physical and psychological care of a child from birth until the eighth year of life cannot be stressed too strongly as a determining factor in the regulating of adult emotional adjustment. The physical element is of primary importance, since the healthy child has less difficulty with environmental strains than the one who must struggle with two adverse factors. Even before birth much can be done to help the emotional status since intra-uterine life may be conditioned by the health of the mother. A sickly baby does not have an equal chance with a healthy infant, and one with improper functioning endocrines may be crippled for life both physically and mentally. Prenatal clinics have done much to protect the health of the mother but as yet her endocrine status has not been sufficiently studied. Whether excessive emotional activity with its secondary effects on the endocrines can have an effect on the unborn child is still a problem, but it would seem to be perfectly logical and must be kept in mind as a developmental cause of endocrine abnormality of a minor nature in the infant. It has been recognized that in gross endocrine dysfunction of the mother, replacement therapy is of direct value in the child's physiology.

Given a normal physical body, an individual life is composed of psychological traumas when anything occurs in the life pattern which radically differs from the average pattern. It is entirely within the realm of possibility that the process of being born is an important psychological event in the life of the child. In utero, the child is completely dependent and needs do nothing to sustain life, the full burden being carried by the mother. The mere process of birth is the first important human experience which the organism must meet and it is accompanied by a certain amount, or I would rather say, a considerable amount of physical discomfort. Its results are a menace to the infant's feeling of complete security and dependence. After birth, the child must perform, without aid, certain primitive acts in order that life may be sustained—he must breathe—he must use some initiative in the action of sucking and swallowing in order that food may be procured. Instinctive and reflex as these acts are, they are, nevertheless, a vital change in the life pattern. Interesting as this is from a speculative viewpoint, we do not know what effect, if any, this probably terrifying procedure of being born exerts on the development of the child or whether some react differently than others, due to inherent differences. The obstetrician might be able to help solve this problem had he time to observe psychological reactions. I am, of course, eliminating permanent physical birth injuries which are often the cause of maladjustment, as well as difficulties due to organic diseases of the brain. From our present knowledge, we know that we have, at birth, a living mass of protoplasm which can be markedly affected by its environment and which is exceptionally imitative and suggestible; we cannot definitely state which characteristics are inherited and which are not. We do know that certain physical traits are present which have been definitely transmitted from the parents, and we are reasonably sure that the degree to which a child may be developed intellectually is also present. Beyond this all factors of inheritance are theoretical. In view of this fact, it is entirely possible that the child's adult behavior depends almost entirely upon its early environment. I have eliminated in-

*Superintendent, Delaware State Hospital.

herited physical defects of any type. It has been said that in the first seven years of life lie the origins of the habits of thinking, feeling and acting, thus leaving the responsibility for future mental health most prominently in the hands of the parent. We might divide our discussion into three portions: the maternal role, paternal role, and the combined parental role in relation to child development.

Early in life the maternal role is of greatest importance, since she supplies all the child needs to obtain satisfaction of the inherent instinct of self preservation, namely, the supply of food and the provision of body comfort. To satisfy popular sentiment we would like to feel assured that an infant had a definite feeling towards its true mother, but in fact this cannot be done. The maternal role need not be played by the blood mother, but is taken by any individual who gratifies the instinctive needs of the child. The attachment is one-sided based on the mother's feeling towards the child. Should the child be rejected by the mother at birth, the infant merely becomes attached to that person who substitutes. The conflicts which may arise later in life due to such a rejection, if continued, are based not on inherent emotional factors but on the more superficial ones which have developed, and the emphasis placed on the family group through the slow process of civilization. The infant demands nothing more than security and does not question the source. Conflict due to rejection of any type can occur only after a sense of security in a relationship has been established.

From a psychiatric viewpoint the importance of leaving the infant alone, except to care for immediate needs, cannot be too greatly stressed. From a physical viewpoint this is well recognized. The parlor tricks which a very young child can learn are not signs of intelligence but merely of imitations, and a healthy self-sufficient child has a better chance for adjustment than the precocious nervous child who constantly demands the attention of others. Moreover, an erratic emotional life is poor material for any person at any age and the overattention which an infant often receives in the majority of cases must be discontinued as the child becomes older and the family increases. An infant quickly learns to demand attention and if he continually receives it there will be produced a false feeling of his own position in the group relationship as he grows older.

The feeling of maternal dependence should be eliminated as quickly as possible and the child should acquire self-sufficiency at as early an age as his inherent intelligence will allow him to. Only in this way can the arrival of a younger sibling be accepted without emotional trauma. A sudden lessening of attention produces a feeling of insecurity and since jealousy is an emotion produced by insecurity and inferiority, it may develop into overt behavior reactions which are difficult to control. The need of a feeling of security is so essential throughout the entire development of the individual that care must be taken not to endanger it at any time. If early in life this feeling is shattered and not repaired the result is an adult who fails to reach the highest possible development because of a fear of giving up even the slightest amount of security which is present in order to realize higher ambitions. The feeling of rejection which a child must experience when it has received an excess of early attention which must later be lessened or under some circumstances entirely disposed of brings into play one of the fundamental instincts, that of self-preservation. The pressure caused by over-activation of this instinct must have release, the manner of obtaining this release being based on the attitude of the parents, particularly the mother in early years of life. If the child is aggressive he may attempt to physically harm the object which has endangered the fundamental feeling of security, temper tantrums may result and become a permanent part of the picture, if desires are gratified by them. Stealing, running away or other attention-gaining mechanisms may be used and may become a permanent part of the personality picture, developing almost habitual aspects. If the child is submissive, his behavior may be all that could be desired, but there will be an anti-social reaction in the form of withdrawal and abnormal phantasy formation. In the more extreme cases, and fortunately rare ones, there may be attempts of self-destruction in the forms of neuroses, phychoses or suicide. Sui-

cide may be an attention-gaining device, since some children do not appreciate the meaning of death and are merely impressed by the amount of sorrow and attention surrounding the death of the individual. In this case it is an aggressive act, its aim being to secure attention as well as to inflict injury to that individual who has threatened one of the essential needs of the organism, a feeling of security.

Whether the reaction is aggressive or submissive in nature depends upon two factors: physiologically, the endocrinological make-up of the child may lead towards an inherent reaction pattern towards adverse situations; or, on the other hand, the behavior of the parents toward adverse situations may cause an imitative reaction in the child. Even though the reaction is physiological in nature, it may be diverted into socially acceptable behavior by a wise and unemotional system of training and discipline. The physician may improve the situation by removing foci of infections, regulating the life of the child or prescribing endocrine therapy when it is indicated. Punishment, when necessitated, must be appropriate to the offense, must be inflicted without a show of emotion on the part of the parent, and the reason for punishment must be thoroughly understood by the child. It is essential that resistance towards adversity must be built up early in the life of the human organisms when pliability of behavior is still present. As long as civilization progresses as rapidly as it does from a material and mechanical viewpoint without giving the individual opportunity to progress to an equal degree physiologically and psychologically so long will adult adjustment become more and more difficult. Thus, with each generation, it becomes ever more necessary to train a child to meet frustrations which are bound to occur with increasing intensity.

Thus it seems necessary that the child should have a certain amount of thwarting early in life so that he may learn emotionally how to overcome or accept obstacles in a rational and socially acceptable manner. It is difficult for the mother to view her child as from a distance, unemotionally analyzing his assets and defects and using the knowledge which she thus obtains in raising her child to be a useful adult who obtains a maximum amount of satisfaction in life.

Social adjustment must be started early so that the rights of other individuals may be respected and so that he will demand his own rights with a minimum amount of conflict. He must learn to live in his own generation and to respect the rights of other generations. To do this, it is essential that he associate with others as soon as the period of infancy is past.

Too often a child is trained by dominance. This may produce a docile, well-behaved child, but inhibits the development of curiosity and the knowledge of cause and effect so essential for maximum mental development. Dominance is an easy method of training but surely does not train the individual to use judgment, nor does strict adherence and submission to such training tend to develop an adequate self-poised adult.

The raising of a child is, after all, a matter of good judgment, unhampered by the emotional attitude of the parent. It depends upon a clear understanding of the child as an individual, with a clear concept of his abilities both physical and mental. It consists in allowing the child to develop as far as possible through the use of his own initiative without attempting to force the child to a degree beyond his own inherent abilities.

Paternal role in early life of the child is frequently of too little importance. The child does not recognize the position of the father in the family group, since his contacts with him are too slight if the father must leave to attend to whatever business in which he is engaged. He does not recognize the essential relationship which exists until he is considerably older. Often the father does nothing in the matter of punishment, since he is not present when the misbehavior occurs. Depending upon his disposition, he may be either a playfellow or an individual to be feared. The affection existing between the father and child is not as strong as that of the mother, in that the greater part of the father's life is spent outside of the home. It is probably true that the same child-maternal relationship will exist when the mother is in business and the training of the child is left in the hands of hired help.

With our present economic situation, it seems almost impossible to produce an equal relationship between the two parents and the child. However, the relationship between the parents in the home may have a definite and lasting emotional effect. Discord between the parents does not lead towards a happy marital adjustment of the child in later years. Variation of punishment and tolerance toward misbehavior is confusing. Dissension should not be carried out in the presence of the child if he is to respect authority, a necessary personality attribute since disrespect of authority in the home may continue throughout life.

The combined parental roles is of great importance in child psychology. Too often one parent will show sympathy when the other has been attempting discipline. In studying the personality of the parents, this often is found to be based on a play for the child's affection. The father may reject the child because of jealousy of the attention which it obtains from its mother. This in very early years has little effect because of the minimum amount of time which is spent with the father. More often the child is jealous of the father because of the attention which is given him when he arrives in the home. The mother who has been overdemonstrative during the day changes her attitude on the arrival of her husband and gives to him the attention which the child feels rightfully belongs to him. This jealousy may cause the same behavior reactions which we find occurring in jealousy directed toward other siblings. Too often the parents project their own unfulfilled wishes and desires into the child, in spite of the child's inherent abilities. It is essential that the parents realize that the child is of another generation; the expected discipline and behavior of their own childhood cannot be consistent with modern trends. It is the duty of the parents to be familiar with the advances in education and social life so that the child will be able to live in his own age group successfully and that he will be trained for adjustment in this group and not for the group in which his parents lived. There must always be present a cognizance of progression and social situation.

Illness of the child is one important factor in changing the behavior. Too often one hears the parents blame the childs' anti-social actions on an illness in which the central nervous system was not involved. To the parent this is an explanation and a denial of their failure in handling a situation properly. Undoubtedly, the ill child has least difficulty if handled in a hospital. The explanation for this is simple, in that he is one of a group and as one of a group he does not receive special attention. It is true that some nurses err in giving the physically attractive child more attention than others and in this way occasionally do damage. However, on the whole the hospital staff is too busy to play a great role in the "spoiling" of the patient. On being admitted to the hospital there is a radical environmental change accompanied by fear. However, in well run hospitals, this is shortly overcome on entering the ward and seeing other children adjusting satisfactorily. Let me state here that I feel that unless the child is dangerously ill, ward placement is of more value than a private room placement with private nurse, in which case the child is much too apt to receive an excess of attention. Expectation of good behavior of the ill child usually results in such.

When the child is acutely ill he is not a problem from the viewpoint of discipline. His lack of knowledge of the consequences which may result relieves him of a fear reaction. He is also less demanding than the adult and accepts situations as they arise, and since the nervous system is not as well developed as that of the adult he does not feel pain to as marked a degree and he recuperates much more rapidly. Probably one of the dangers in hospital placement of children is the lack of occupation during convalescence when his illness is of such a nature that he is not content to lie quietly. Habits of thumb sucking, masturbation, and playing with fingers and other anti-social acts have been developed because of the lack of other occupation. The provision of play material and the encouragement of self-help when he is physically able prevents the development of adverse habit formation. If the child is kept at home he is too often the center of attention and finds, when the acute symptoms have been relieved, that being sick is an enjoyable situation. The infractions of good behavior are ignored. Because he is the center of attention and because

of the obvious worry which the parents show, his feeling of self-importance is elevated. He may demand extra attention when he becomes well and he may find illness a pleasant escape from the problems of life, thus he attempts to evade unpleasant situations by feigning illness and so obtains the desired attention and leniency towards misbehavior.

In closing, I would like to say this about the problem of intellectual limitation—a carpenter who is successful in his field is happier than a professional man who is unsuccessful. Parents will refuse to accept the statement of authorities and continue pushing a child, thus accustoming him to failure or producing behavior problems because of inferior feeling. It should be the aim of the parents to produce a happy individual, no matter what the field may be and not to demand continuous study in the intellectually unequipped child.

STUDIES OF CASES OF GENERAL PARESIS IN DELAWARE STATE HOSPITAL

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This paper in no way attempts to discuss the relative values of the various types of treatment for syphilis, nor does it attempt to add to the knowledge we have of the subject. However, in the study of the records of cases of general paresis who have been entered in the Delaware State Hospital in the last twenty or twenty-five years interest was aroused as to the outcome of such cases.

As to syphilis itself, we can only say that innumerable articles and books have been written on the subject and it would take the better part of a life time, if not more, to read all of the literature on the subject. Even its history is becoming dimmer as discoveries have been made which show that the American Indian was not responsible for the almost epidemic-like character which it assumed in the middle ages. It was certainly recognized in Persia in the sixteenth century, and may have been carried to Europe from the Far East. Recent archeological studies would seem to indicate that the disease is much older than has been generaly recognized. It has even been suggested that Alexander the Great died from the infection, but to base a diagnosis on the vague descriptions of that period ranks with the other unfounded tales as to the cause of death of other historical and renowned people living in rather ancient periods. The fact remains that it was not until the twentieth century that the condition was treated scientifically, with the aid of the laboratory. Mercury was used in the fifteenth century, but no reason for its curative powers was given. Perhaps the patient was not cured, although the symptoms disappeared.

Descriptions of general paresis were made as early as 1672, although the specificity of the disease was not known until the twentieth century. As to why such a small percentage of syphilitics develop general paresis is still questionable. The rapidity with which advances were made in treatment during the last twenty years, and the duration of remissions due to treatment extending over fifteen years bring the disease from one of a hopeless prognosis to one in which clinical recovery is fairly frequent. Since the spinal fluid is involved in all probability before the mental and neurological symptoms appear, and since the blood Wassermann may be negative, a syphilitic should not be pronounced cured or arrested until one or more spinal examinations have been made.

There were 109 unpicked cases studied in this group, about one third of the cases so diagnosed on available record or since 1916.

During the first five year period, from 1916 to 1921 there were 16 cases, none of which were over middle age, all of which died, the cause of death being due to general paresis, with the exception of one case who showed marked improvement. On being returned home he found that his family had left him, he became depressed and committed suicide. Seven were in the hospital over two years and not more than four years; two were in the hospital less than six months. The other seven died within one and a half years of hospital residence. The usual routine mixed treatment was given, except in one case which received, in addition, spinal drainages. This man improved for a while and lived the longest.

During the second five years, there were 43 whose records were studied. Six of these were over sixty years of age. Thirty-four of

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these died, all of general paresis, but thirteen gave a hopeless prognosis on admission, five were discharged improved, one escaped, and three still remain in the hospital. These three have had the malaria treatment and showed an arresting of the process. Two discharged patients received the Swift-Ellis treatment with some improvement. One improved with spinal drainages. One was discharged after receiving treatment with malaria. Two of the others received malaria but did not react well, dying of the disease.

During the next five years, twenty-seven patients were studied, fifteen of whom died. Two of these were over sixty, and five died of other causes. Five were in the hospital less than six months. Of the five remaining deaths, two received malaria, and one malaria and Swift-Ellis. Seven were discharged as improved or recovered. Of these seven, six received malaria combined with Swift-Ellis—or tryparsamide treatment, and one received Swift-Ellis treatment alone. Of those still here, four received malaria and tryparsamide, all showing arresting of the process; three showing actual improvement. One received inductotherm and tryparsamide, without improvement.

Of the twenty-two in the next group, ten died, six of other causes, one over sixty years of age, and three in the hospital less than six months. Of the remaining twelve, the six receiving hyperpyrexia and tryparsamide improved; one improved on tryparsamide only; one showed no progression with tryparsamide; while the other four who received only the tryparsamide showed no improvement, but progression of the disease.

The figures given show a more favorable prognosis in the invasion of the central nervous system by syphilis. The mixed treatment was of no help whatever. Spinal drainage combined with mixed treatment in one case seemed to have definitely prolonged the patients' life, but did not stop the process. Swift-Ellis therapy produced a few remissions, but on the whole did not show particularly favorable results. Malaria therapy showed the most promising remissions, which in some cases have lasted over fifteen years. Those patients were kept under observation, and the blood and spinal fluid were examined routinely. Those who reacted most favorably were the patients in which symptoms were not far advanced and who were comparatively young. In those who seemed to recover both the spinal Wassermann and the colloidal gold curve gradually came to normal. In a few cases the spinal fluid tended to become slightly positive but it quickly reverted to normal when the patients received a course of tryparsamide.

The results of inductotherm were at first thought not to equal those of malaria. However, combining inductotherm with tryparsamide seems to be producing results which are equal. Both are hazardous forms of treatment in the presence of other pathology. Inductotherm offers the advantage, in that it is possible to terminate the treatment as soon as adverse symptoms appear. However, its value does not seem to be as great unless it is combined with tryparsamide. Since tryparsamide, as is commonly known, may in some individuals have a definite effect on the optic nerves, it is necessary to examine the visual field before each treatment and to question thoroughly regarding subjective symptoms. At the sign of the least difficulty, it is necessary to discontinue the treatment immediately. Should visual difficulty occur, repeated spinal drainage will in most cases restore normal vision.

Malaria is a more dangerous condition, in that the reaction is not as easily controlled. Occasionally a recurrence of the malaria has appeared months after it was thought that the patient was cured.

It can only be stated that the prognosis of general paresis is fairly good if the cases are diagnosed early and carefully treated, with all other physical abnormalities taken into consideration. Needless to say, all syphilities are entitled to one or more spinal fluid examination even though overt neurological and mental symptoms are not present.

SUICIDE

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It has been stated by an authority that there are a minimum of 310,000 suicides a year in the entire world, and of these, 20,000 are in the United States. During the period that vital statistics have been kept it is easily

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demonstrable that suicide is on the increase. The increasing complexity of modern life has borne the brunt of the blame and to this may be added the relaxation of social discipline. The motivation includes such things as economic stress or financial loss and unemployment, general despondency, domestic upsets and unhappy love affairs, worry or fear over possible insanity, poor health, old age and helplessness, alcohol and drugs, an abnormal personality, death of a spouse and delinquency. If the current news can be trusted it would seem that a sudden change of government, such as occurred recently in Austria with its accompanying wave of suicides, might be an additional motive. As to the influence of heredity there is no proof that suicide as a specific diathesis is inherited. To assume that certain overt tendencies are transmitted through the germ plasm is very far-fetched, and not biologically subject to proof. From a psychological standpoint, however, we must look upon such causation as secondary, and for the primary factor must delve into the personality of the individual and seek a subjective rather than an objective cause. All of our minds are replete with contradictory emotions, buried tendencies of opposing forces which impel us in contrary directions. As a British writer puts it, there is excellent evidence for being able to say that one reason for self-destruction is that the suicide desires the death of another person, and that in this way he acts out upon himself what he wished to inflict upon some one else. The psychoanalyst looks upon suicide as an illustration of the inherent desire in the mind of man to evade the difficulties and problems of life.

As an example of the many excellent reports and studies on the subject, that of Franks, of Toronto, is one of the most inclusive, and is illustrative of findings elsewhere when a detailed study is made. In the seven-year period, 1929 to 1935, inclusive, there were 968 known cases of attempted suicide in Toronto with 626 deaths, or a mortality rate of 64.7 for all cases. The rate for females was more constant in attempted suicide than for males and was always higher, though in the males there was a higher incidence of fatal terminations. As to the season, the rate was higher from September to November inclusive, and lowest in January. Females favored poisoning and used the poisons at hand in the home, such as lysol, iodine, and bichloride of mercury; a considerable percentage used stove gas. The males preferred jumping from heights, cutting, and shooting. Of the 352 cases of attempted suicide admitted to the Toronto Psychiatric Hospital, it is interesting to note that besides the large percentage diagnosed as belonging to one of the depressive groups, there were ten cases of toxic psychosis who made attempts during a temporary period of confusion and delirium.

Why do people commit suicide; through what mental processes does a person go before he attempts or commits suicide? All of us are constantly presented with problems of varying complexity, yet the most of us do not become demoralized or attempt self-destruction. We manage by hook or crook to find a way out of the puzzling situations, most of which are after all rather insignificant, such as, for example, whether we will get a new suit now or await the next fire sale, or whether to buy a new Ford or make the old bus go for another year. However, there are times when such situations may turn out to be both annoying and disturbing, with a resultant inner conflict and temporary inability to solve the problem. Our emotions are aroused—so we have met what the sociologist calls a "crisis." By crisis we mean any serious disturbance of habit or custom, such as may be caused by disappointment resulting in unhappiness or sickness, accident, unexpected loss of money, property or job, etc. One has a new situation to deal with and while trying to restore things to a more individually bearable basis, he tries first one scheme and then another and is often sorely perplexed. If he succeeds then he has adjusted; if he does not, he is unadjusted and may in the course of a long drawn out struggle become demoralized by repeated failure. Naturally the degree of disorganization that occurs will depend upon the whole mental equipment of the individual. Crises may be immediate or cumulative. As the word signifies the immediate crisis calls for a solution or readjustment at once, such as to an accident or a death. The cumulative may be the result of a long drawn out illness or series of tension situations. People meet a crisis in one of two ways; they either face the problem or they withdraw from it. Their withdrawal

may take the form of introspection, drugs or phantasy, or they may develop a depressive mental reaction which in those so disposed may eventuate into suicide. And what is it that disposes one favorably towards suicide? This is not definitely known, yet it must come from something in the environment, such as newspaper stories of suicides or the acts of other people. Sometimes the wish for death is ill-defined and may result from a sort of weariness with life and a tedious routine. Often the wish is more tangible, such as an unfulfilled desire for companionship or some need that cannot be satisfied by the environment; or it may take the form of a recognized wish revolving about some one object or thing such as an unrequited love.

When we deal with the relationship between suicide and mental disease the first question that presents itself is whether those who attempt or commit the act are necessarily insane. There are conflicting views on this point, but apparently there are many so-called normal people who do end their own lives, though without doubt certain types of psychotics are more liable to do so. Kraepelin maintains that an average of 33% of all suisides are psychotics, while Esquiral, the French psychiatrist, considered suicide a special form of insanity. It is the opinion of Hoch that a large proportion of suicides are psychopathic personalities or have border line psychoses. However, since it is impossible to draw any hard and fast line between normality and mental disease it seems useless to take the extreme view that suicide alone is sufficient evidence of insanity. We know very well that there is no such thing as "temporary insanity" according to the popular notion, and that the coroners jury often brings in such a verdict with little, if any, supporting evidence in order that the stigma and any legal penalties may be evaded. Neurotic people are the victims of mental conflict and often suffering from much unconscious morbid guilt; so many of them think and talk about suicide that it is often necessary to consider them as potentially suicidal. It is a highly popular fallacy to suppose that anyone who talks about suicide will not carry it out. Only experience can enable one to differentiate the person who really means what he says and another who through such a threat is endeavoring to get sympathy and attention and thereby dominate some situation.

Broadly speaking, any person with an abnormal mental state, exhibiting depressive tendencies can be looked upon as potentially suicidal. Of those abnormal states the simple depressions or "melancholias" are quite numerous. In the beginning the patient exhibits little external evidence of anything wrong. He may be less active and less communicative than before, and exhibits little interest in social events or amusements. These symptoms usually grow worse but are often kept well hidden by the patient. At this stage these patients are dangerous suicide risks. Sometimes when questioned they will admit that death looks good to them but they will rarely spontaneously admit it and often deny it, thus throwing relatives and others off their guard. They rarely attempt suicide in the presence of another person. Hence it is usually not difficult to prevent if the danger is recognized. It is in the depressive phase of manic depressive psychosis that morbid depression is most marked; suicide then is not only possible but is even a likely happening. This is especially true in that form of the disease which may show itself at the involutional period of life. Statistics show that manic depressive psychosis probably ranks first in the psychoses leading to suicide. In the paranoid type of dementia praecox, acute cases with delusions of persecution often find their problems so insurmountable that suicide seems the only way out. This type will resort to any method and the attempts are at times desperate and the methods used may be particularly grotesque. Often, if the attempt proves unsuccessful, if the patient is questioned, the motive given may be trifling and absurd or he may give no reason at all. It seems to be a fact that a psychotic of this type may commit suicide without premeditation as to method, means, or consequence and with no realization of the result of his act. In other types of dementia praecox, hallucinatory voices may at times order patients to kill themselves. Alcoholics probably commit suicide because of terrifying hallucinations and ideas of a depressive or persecutory nature. It can be well understood that the victim of per-

sistent persecutory delusions may in the course of time become tired of the struggle and welcome the thought of death. So sufferers from senile and arteriosclerotic disorders, paranoia, and general paralysis, may under such circumstances end their lives. Suicide as a means of escape is as evident in these individuals with their imaginary trouble as in the case of more normal people who face a real trouble.

We come now to a special problem confronting the chief of every mental hospital: when can a case in which suicide has been a problem or even a possibility be safely paroled. The question of responsibility in cases of suicide becomes at times a very unwelcome burden, particularly when relatives seek to take legal advantage of the incident. It may do a great deal of harm to permit the idea to prevail that physicians and hospitals are liable for damage, unless neglect is obvious, in these cases. The cunning and persistence of some patients to end their lives would baffle almost any measure to protect them. Nevertheless, experience shows that almost all suicidal attempts occur when the patient is left alone, and by obviating this situation we thereby approach control of it. It is sometimes exceedingly difficult, but very important, to convince some relatives that certain patients are actually suicidal. Unless they are so convinced and have a thorough understanding of sharing the responsibility certainly no such patient can be entrusted safely to their keeping. With mental improvement and when good rapport with the patient is established, and when and if the relatives have insight into his trouble and are willing definitely to share the responsibility with the hospital, then, and only then should the patient be paroled.

In the prevention of suicide we should first remember that rarely should depressions be treated at home because home treatment is inadequate and dangerous. The most rational prophylactic aim must be to try to lay down a healthy emotional foundation for the mental soil, so that in later years the mind shall be enabled to adapt adequately to the inevitable periods of painful reality that in some degree must come to all. Occupation is an important item in the general treatment as it tends to keep the patients' concentration on action other than suicide. General hygiene and dietary measures as well as promotion of sleep are of importance. Attention to organic disease requires no special comment. Many difficulties can be overcome by using the patient's tendency to increased suggestibility, so that suggestion becomes a valued form of psychotherapy. Disharmonies in the home, oppressive treatment, etc., must be removed or ironed out. When an adequate goal has been created for the patient, then can we consider him on the way to recovery.

There is prevalent a mistaken notion that the suicide rate in mental hospitals is high, this in spite of the obvious fact that patients are under the watchful care of a trained personnel. In the Delaware State Hospital over a period of ten years there have been just six successful suicides in a population ranging from 605 in 1928 to 1139 in 1938. In addition there were six suicides of paroled or discharged patients during the same period. Of these twelve suicides four were males and eight were females. Three males committed suicide in the hospital and so did three females. Only one male committed suicide while on parole, while there were five females who succeeded in their efforts while on a visit.

The methods elected were as follows:

Males: jumping from a height, 1; strangulation, 1; jumping in front of a passing automobile, 1; shooting (on parole), 1. Females: Lysol (1 on parole), 3; bichloride (on parole), 2; falling from height (on parole), 1; stove gas (on parole), 1; strangulation, 1.

The diagnoses in this group were: manic depressive insanity, 5; psychoneurosis, 2; dementia praecox, 2; psychopathic personality with psychotic episodes, 1; epilepsy with psychosis, 1; general paresis, 1.

In conclusion, it is apparent that suicide presents a serious problem affecting community life and institutions, as well as disrupting homes. Some patients give no warning, on the other hand many do, and it is an early recognition of these danger signals that is of first importance. This is where the family physician must aid; as has been said before by a distinguished writer, the general practitioner must practice minor psychiatry just like he does minor surgery and be able to distinguish between benign and malignant cases; major psychiatric problems should be sent to the hospital just like major surgical cases are sent.

MULTIPLE INFLUENCES IN THE FIELD OF MENTAL HYGIENE

Clinical Studies of Personal and Social Maladjustments, With Emphasis on the Multiplicity of Determining Factors

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As in diagnosis and treatment in all other medical specialities, it is necessary in psychiatric work to follow a technical approach in order to identify the factors behind the disorder. The human organism develops in totality in accordance with designs of remote heritage in the phylogeny of the race, as well as by the plan of development in each individual life history from infancy through adolescence to maturity. Critical issues may appear at any stage of development, effectuated in accordance with the time when they make their appearance and with the defensive mechanisms that have been elaborated by each person.

No development period is free of nervous and mental hazards. Early in infancy, it is claimed that a pattern of responsiveness becomes established and remains fairly constant throughout life. This behavior depends upon encouragement and training. Attention is directed first to the acquirement of healthy habits of intake and elimination. Temperaments of children so vary that not all can be guided with equal facility. Early differences are noticed in speed and skill of movement, energy output, resistance to direction, and reaction to disappointment and denials. Some children cry without any apparent signs of discomfort. Others are very good babies, contented and docile, even in the presence of pin scratches at every turn. Almost simultaneously with the training of habits of food and elimination, attention is directed to the control of energy output. Children are to be taught the use of objects so that they can do things efficiently, promoting thereby satisfactions as well as adaptabilities.

Then there follows, in this habit training program, a control of adjustment with other children. Recently training toward adjustment in groups has been set forward one or two years in the hope of removing some of the difficulties in kindergarten and in the first grade at school. Much diplomacy is exercized in teaching children that all persons and playthings are not a part of themselves to be used for their exclusive enjoyment. This is a very critical period in the child's social adjustment. Too must restraint results in permanent patterns of rebellion. Frequent changes, indecision and contradictions on the part of parent or worker arouses a confusion of emotions in the child. Emotional integration even at this early period depends upon a consistent program of constructive interests and essentially pertinent emotional codeterminants. Too often habit training is aimed at restricting the overactive, inconsiderate, and egocentric child, especially in a large group where conformance is the premium. Most time is consumed with the more active children who are the greatest obstacles to conformance in the group as a whole. To accomplish a more even distribution of time spent at individual guidance, children are now being grouped according to activity, size, strength and degrees of social extroversion. Habit training in children's agencies has become primarily constructive and positive; "don'ts" have been replaced largely by invitation and encouragement.

In the life history beyond the juvenile stage, there appear more elaborate sensibilities as the organism matures. Influences which played no part earlier are now determining forces. The home and school cooperate to develop every worthwhile capacity for adjustment. On the subject of community opportunity, the amazing feature is, not how much delinquency prevails, but rather, how much adjustment there is, despite a total lack of inspiration and a deplorable meagerness of recreational outlets. Many small centers of adolescent activity are operating totally without adult supervision or control. Poolrooms, street corners, athletic clubs, back lots, parks, second floor dance halls, and fraternity and sorority houses all seem to be going at full pace in the smugness of their separate little cultures.

The child reflects home and family distress under the pressure of desolation and poverty. Parents and older siblings become cynical; uncles, grandfathers, second and third cousins are all being herded together in the same dingy hovels. Children are expected to be

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blind and deaf to the miseries and the moral obtuseness of their elders. The saying "It's a wise father that knows its own child," is reversed to read, "It's a wise child that knows its own father." Where alcoholism, corruption, desertion and divorce characterize the home life of the child, little can be expected in the way of respect or faith in justice and authority. A child nine years old emphasized very forcibly the hopelessness among adults when, in answer to the question "What are you going to do when you grow up to be a big man?", he remarked, "Nothing, I guess. Hell, there ain't no more jobs."

A number of cases will be described briefly for the purpose of demonstrating multiple influences that operate in personal and social maladjustment.

Eddie, a thirteen-year-old white boy, was referred to the Clinic by the Juvenile Court for stealing. He is the last of four children of neuropathic family stock. His father suffered many phobias since an early age. Bedwetting and nail biting prevailed among siblings. Birth was instrumental, followed by some skull deformity. There was a history of unconsciousness at eight years of age, in an injury by automobile.

Eddie is in the sixth grade repeating this year. He has not failed previously. Teacher describes him as day dreaming and unable to concentrate. She thinks that he is just not capable. At home he is friendly with other children and enjoys himself most when he is with them. Boys all like him. Examination at the clinic reveals an attractive, responsive little fellow with mobile easy expression. He is quite a vocalist in conversation. Psychological test rates him in the high dull normal level of intelligence on verbal tests and above average intelligence on manual tests. Neurological examination is positive for diffuse organic brain dysfunction; pupils are unequal, reflexes overactive, marked dyskinesias and incoordination on finer finger movements with speech defect. Besides retardation in school, Eddie's persistent stealing is the only primary issue that would bring him to the attention of the authorities.

Effective in creating this behavior pattern is a dissatisfaction with school progress because of inability to succeed in reading subjects. Eddie is a non-reader. For his dissatisfactions in school he substitutes gang play in which the chief criterion of superiority is stealing. Eddie is not a seriously unstable child even though he suffered injury at birth and again in childhood. These factors no doubt operate in the boy's emotional responsiveness and have much to do with undermining his attentiveness and stability in the classroom; they are not however solely responsible. Along with neuropathic heredity they act as supplementary detersive factors.

Roy is a ten-year-old white boy, referred by his family physician because of nervousness. He had truanted persistently and would stay away on the slightest provocation. He complained of headaches and pains in the stomach every morning. He is in the fifth grade, having been promoted each year. He has never misbehaved in the classroom. He is the third of six children reared in a family of opportunity with every attention and care. From an early age he was noticed to be sensitive and fearful. He cried a great deal when he was left alone. Although similar in features to his siblings, all of whom show a strong family resemblance, he has always avoided the characteristic rough and tumble play of the other boys. He cries when he is corrected. He has often come home from school in tears because the teacher has scolded other boys in the room and he was afraid she might scold him the same way.

Examination at the Clinic reveals average intelligence in all fields. Without previous information about the boy's complaint or history, the psychologist reports his findings as follows: Roy is unassertive and insecure in attitude. He fails to produce adequate responses even if the problem is within his comprehension. Roy has a fine informational background, but does not know how to demonstrate his learning even if coaxed. At times he remains silent for unusually long periods before a perfectly adequate answer is made. His face retains a puzzled expression during the entire test session. The language forms used are frequently quite superior. He is slow in answering but ideas are expressed very aptly and accurately. He has marked feelings of inadequacy which interfere with effective social and verbal adjustments. Any

task of an arbitrary nature is difficult for Roy. He is not very practical in his decisions. He easily becomes involved in a maze of ineffective planning. Roy is of average intelligence. His achievement in special subjects is one grade beyond his actual grade placement.

Physical examination was essentially negative. Roy is in every respect well developed physically, of good muscular build, normal in height and weight for his age, free of system defect.

In the course of analysis it is found that Roy is following a temperamental pattern very much like that of his father in his youth. His father, who is now well adjusted, employed, and normal in every respect, was very sensitive as a child and cried on the slightest occasion. He often cried in sympathy for brothers and other children's tears constituted a signal for him to join in. The patient has followed a somewhat similar course. He is recently improving. Following a very careful home investigation and analysis of life history with full attention to family relationships and teacher attitudes, there has been no evidence to favor a series of sensitizing episodes as a cause of Roy's timidity. This much has been true, however, that it has been difficult for brothers to refrain from scaring or teasing him to tears for their amusement. This factor has probably perpetuated a temperamental deviation, which in itself is not disabling.

The following case, quite different from the foregoing, represents what might be termed an end-product in the age of decline at sixty, with behavior largely patterned by multiple influences in early life. Rake is in the workhouse serving his twenty-third sentence for vagrancy. No seriously antisocial acts have ever been charged against him. He was born and raised in Delaware of stable parentage. His father died when he was young. He has always been healthy. He went to work at odd jobs when he was thirteen years old. He never married. He has used whiskey moderately but has never been known as a drunkard.

With this history of very limited schooling, sporadic employment at unskilled labor, and a series of vagrancy charges with short terms in the workhouse, it might be expected that the man was seriously psychopathic or feeble-minded. The psychological tests are as follows: Terman Vocabulary: Chronological age 60, mental age 19 years 8 months, intelligence quotient 123; Stanford-Binet: mental age 16 years 5 months, intelligence quotient 102; Army Performance Test: mental age 11 years 4 months, intelligence quotient 73. The psychologist reported that the man possessed a superior vocabulary and a substantial fund of knowledge. He knew that he was taking a "sanity test" and said that he was prepared to do his best. He was diligent and earnest in relation to all items. He seemed to enjoy the challenge and occupied himself industriously. Neurological examination is negative for system disease except a severe infection of the gums. Stature is small; there is quite a marked kyphosis in the dorsal region. Serological tests were completely negative. Blood pressure within normal limits.

On psychiatric interview Rake is freakish looking, due to s h o r t, stooped stature and ungainly protrusion of jaw. He talks rapidly and coherently, has a good vocabulary and converses well on subjects that have come to his attention. He gives a very good account of his early development. He says that he was drunk on several occasions but has never been addicted to the use of liquor.

In regard to his early life, Rake says that he has never had more than a grammar school education. He was the youngest of four boys. His sister died in infancy. He left school at thirteen to work in a butcher shop. He carried 100 pounds of hog fat twice a day about a mile and a half with a wheelbarrow strapped to his shoulders. He does not believe that he was an unusual boy at school. He got along very well and had a lot of playmates. He mentioned some men in Delaware, prominent in public life, with whom he went to school. In fact, some of them played in his backyard with him. He claims that the officer who first arrested him at forty years of age had been a boy in his class at school, with whom he had several fights. He believes that some of the kids picked on him because he had long curls until he was eleven years old. In all probability the boy's pugilistic tendencies were a compensation for the nickname of sissy. He was good with his fists, curls streaming.

Due to the death of relatives while he was in his thirties, he has been more or less home-

less, having only a niece as the nearest relationship. He has lived in garages and shacks. He says that he has never violated any law. He admits that he spoke his mind freely and would take up for himself. He adds that he knows practically everyone in Wilmington and does not believe that he has ever made himself a nuisance. He has no resentment against being in the workhouse. In fact, he plans his commitment each winter for protection against the weather. He was afraid at this last trial that he would get only ten to thirty days so he tried to convince the judge that in addition to trespassing he was also guilty of arson, but "no one would believe me."

Rake does not think that there is anything unusual about his many trips to the workhouse. He says that it is the only place where he can be sure of a warm bed and the next meal. He adds that he worked two winters in a cold garage trying to heat a big place with firewood in anticipation of wages. He was never paid for this janitor work. He plans to leave the workhouse in the spring, when weather permits and go down state to work on a farm.

By way of formulation, the man represents a degraded generation of previously good intellectual stock, homeless and isolated from family connections since early middle age. His intellectual state and facility for talking clash too strongly with his freakish appearance and low social cast. This disparity between the man and his appearance arouses in other persons, first a skepticism and then a revulsion. This has probably been the reaction of officers, employers and new acquaintances. Rake is quick to argue. He has a good knowledge of current events and is clever in his ethical interpretations. These attributes, ordinarily assets to a person, have actually worked to his disadvantage in combination with poverty, ugliness and social ungraciousness. He insists that he has never been downright lazy, that he has always worked when he could get a job. His autocritical faculties are quite fair and his judgments are good considering his opportunities.

In search for aggressive unworthy personality traits that might lead to conflict with authority, and troubles with companions in social setting, it was believed that possibly Rake was sensitive and argumentative. His pugilistic tendency in childhood may support this opinion. In his favor, are fair insight and judgment, good intelligence, physical activity and a fairly agreeable general demeanor. The man probably figures as a social outcast, not so much because of defective inherent personality qualities, as because of definite social determinants, so that there was simply no place for this type of person in the community cultural set-up. The deciding factor that worked against the man's adjustment was the fact that he never belonged to anything. It is a challenging life history from the standpoint of ethical codes, for an interpretative analysis of the factors which combined to create a record of twenty-three sentences for vagrancy in the State Penitentiary for a man of average intelligence, good health, genial disposition, and remnants of good family stock.

By way of summary, cases have been reported with the view of identifying primary issues among multiple factors which influence behavior in the run of the mill throughout life. It is sometimes speculated that the same forces operate everywhere and that it is individual responsiveness or constitution which determines success or failure. The reverse is probably true. To be sure, capacities and measurable likenesses and differences in constitution determine the maximum to be expected in life adjustment, all other things being equal. However, early habit training during infancy and childhood, parent and teacher attitudes in the juvenile stage and firm intrafamily devotions at adolescence are most important in the establishment of ethical and moral views at maturity, quite irrespective of constitutional determinants. With an unbiased evaluation of these environmental factors, behavior becomes more understandable.

PREFRONTAL LOBOTOMY: RESULT IN A CASE OF AGITATED DEPRESSION

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Of all psychiatric conditions, agitated depression is doubtless the most distressing. The unremitting mental agony, unrest, apprehen-

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sion, and the relentless pangs of remorse over minor or fancied misdeeds render the life of the victim little worth living. The prolonged course of the average case, with the difficulty in affording by the usual means any but the most transient relief, makes the promise of a method for permanent alleviation of the condition most heartening. The majority of the cases are at or beyond the middle age, and without radical interference many of them can expect no relief from their misery until death intervenes.

Many are past the productive period of life when a possible slight lowering of intellectual efficiency below the normal level for the individual will result in no serious handicap. This fact eliminates some possible objections to the use of surgical methods for relief.

While the typical mental changes associated with frontal lobe damage have long excited notice, it is only recently that the attempt has been made at deliberate application of these effects in psychiatry. In 1936, Egas Moniz, (1) Professor of Neurology at the University of Lisbon, published a report of several cases in which he had cautiously arrived at the procedure used with some modification in this country.

At first he injected alcohol into the subcortical white matter of the prefrontal area. Later he made sections in the subcortical white matter with a leucotome having a steel loop which tended to crush the white matter; still later he adopted a leucotome with a steel band having a cutting rather than a crushing affect. With this instrument he cut six cores, each 1 cm. in diameter in each frontal lobe. He reported few complications following operations. Moniz has reported encouraging responses in agitated depression and also in certain cases diagnosed as dementia praecox.

The operation was first used in the United States by Dr. Walter Freeman, Professor of Neurology, and Dr. James W. Watts, Associate Professor of Neuro-surgery at the George Washington University School of Medicine. In three papers they have reported subcortical prefrontal lobotomy in twenty-five cases (2-3-4). They have had better results in affective disorders than in schizophrenia. Of the twenty-five patients in the series reported, seven are substantially well and five are improved. There was one post-operative death due to cerebral hemorrhage, not necessarily caused directly by the operation. In these papers the authors are careful not to speak of cures until more time shall have elapsed. In a few cases initial improvement has been followed by relapse.

Dr. M. A. Tarumianz, superintendent of the Delaware State Hospital, was interested in the satisfactory results reported in chronic agitated depression. Early this year he and our Consulting Neurosurgeon, Dr. Francis C. Grant, went to Washington to personally observe the operative procedure and to note the condition of persons who had undergone the operation. They were so favorably impressed that Dr. Freeman and Dr. Watts were invited to examine a group of patients at the Delaware State Hospital with a view to selecting those most suitable for operation. The series of cases on which we are now working is based upon these recommendations.

The following case, the first instance of the use of prefrontal lobotomy in the Delaware State Hospital, will serve to indicate the results to be hoped for in the employment of the procedure.

REPORT OF CASE

HISTORY: J. K. is an unmarried woman, 66 years of age. She had a high school education. For thirty years she had worked in the office of a canning factory. During this time she also did some housework. She was considered an excellent housekeeper and took pride in the neatness of her home. At the age of 45, during the meno-pause, she suffered an attack of severe depression with agitation, ideas of unworthiness and self-condemnation. She became resistive and destructive. After three months the attack subsided.

She was well until June, 1933, when she began to show signs of undue irritability. Household tasks became more difficult and often she would leave work uncompleted. In August, 1933, she gave up her employment, complaining that she was no longer capable of doing her job properly. The condition steadily progressed. She developed delusions of persecution and visual hallucinations. She remembered the previous mental illness, realized that she was not well and was anxious that something be done to avoid a recurrence.

EXAMINATION: When admitted to the Delaware State Hospital in October, 1933, she

was physically well preserved. The cardiovascular system functioned adequately. The blood pressure was 160/80. Ophthalmoscopic examination revealed tortuosity of the smaller vessels of the fundus. The thyroid isthmus was palpable. Deep reflexes were moderately exaggerated. There were no abnormal laboratory findings.

She exhibited a tendency toward depression with tenseness, suspicion, and misinterpretation. The stimulation of the admission procedures temporarily dissipated the depression, but very soon she was presenting a picture of agitation, crying loudly, wringing her hands and expressing the fear that she was losing her mind. She condemned herself for making accusations against people, realizing at times that the accusations were without basis.

She wandered restlessly about with a rosary in her hand. Her speech contained many statements of a religious nature. "I feel that my church has thrown me out and my people don't want me and my soul is lost. I want to go home to die. I've tried and tried, but I can't see Jesus." She was temporarily comforted by visits from her priest, but soon her depression and self-accusatory trends would reappear. She constantly misinterpreted innocent remarks, declaring that someone said she was no good, that she was going to be taken to the cellar and whipped, and that she would die like a dog because of her sins. There was considerable fluctuation of mood. During periods of comparative calm, she admitted that she had imagined many things she had stated as fact.

Gradually she grew worse. The agitated depression, restlessness, hopelessness and self-accusation became more constant. She became resistive to feeding and occasionally had to be tube fed for short periods. She lost weight rapidly to the extent of 65 pounds. The idea became fixed that nobody wished to have anything to do with her. When she was told that two of her brothers had died within a short time, she was too preoccupied to pay much attention to the news and showed little sign of grief. Sometimes she was assaultive and frequently she was destructive, usually attacking window glass with a shoe or any other convenient weapon. Although she frequently declared that she should be done away with and threatened to take her own life, she never made any actual suicidal gesture. Recently she began to express the fear that all of the other patients were about to leave the hospital and she was to be left alone. She also frequently asserted that she had no soul and that she was nothing but a block of wood.

On February 12, 1938, the patient, together with a dozen others was seen by Dr. Walter Freeman and Dr. James W. Watts. Her attitude of hopeless agitated depression was so striking that she was immediately chosen as the type of case most likely to be benefited by prefrontal lobotomy, therefore permission for the operation was obtained from responsible relatives. The patient was also consulted and while evidently having little conception of the procedure involved, expressed herself as anxious to have anything done which gave promise of relief since death was preferable to her miserable state.

OPERATION: On March 11, 1938, bilateral prefrontal lobotomy was done by Dr. Francis C. Grant, the technique being as follows: a line was drawn parallel to the zygoma for 3 cm. behind the external canthus of the eye. From that point a line was drawn upward 5 cm., where the skin was marked symmetrically on either side of the head. Under avertin and novocaine anesthesia, incisions were made at the points marked. Trephine openings were made and the dura incised. A special cannula with a cutting loop was inserted into the cortex and directed toward the trephine opening on the opposite side of the head. At a depth of 6 cm. a core was cut, the loop was retracted, the cannula withdrawn 2 cm. and a second core cut. Again the cannula was withdrawn 2 cm. and a third core cut. After each coring a drop of lipiodol was injected through the cannula. The cannula was then withdrawn, a spud inserted along the tract made by the cannula and the lesion extended downward to the base of the frontal lobe until the bone was encountered. A similar procedure was carried out on the opposite side. Following the section of the second lobe with the spud, there was a drop in pulse rate and blood pressure. There was no other evident change and by the time the wounds were sutured and dressed, pulse rate and blood pressure had arisen to their former values.

POST-OPERATIVE COURSE: The effect of the anesthetic subsided promptly. Examination disclosed no abnormal neurological signs. Within four hours she was able to say a few words. There was complaint of pain in the head, some restlessness and nausea. Pulse rate and respiration continued uniform. Blood pressure varied little. She had to be watched carefully to prevent her from getting out of bed. She attempted to remove the dressings from her head.

On the morning following the operation she told her nurse that she had had a baby and asked to have it brought to her. She was not concerned about this and later said she had dreamed it. During the 24 hours following operation she frequently declared she was depressed, but she explained that this was because she was sick and had a headache. On the following day, she was bright and cheerful, and was delighted that her head no longer ached. She was able to enjoy her meals and was much more cooperative than she had been heretofore. She was oriented and remembered events up to the time the anesthetic was started. During this time she showed some tendency to repeat statements over and over. With a little effort, however, she could carry on a sustained rational conversation. She talked freely about her previous delusions, thought some of them might be true but was not at all concerned over whether they were true or not.

On March 14, the following conversation took place:

"Do you remember how you felt before the operation?"

"I felt dizzy headed just like I feel now, but this head hurt all the time. It doesn't hurt now."

"Do you remember how you worried about all the other patients going home and leaving you all alone?"

"I don't worry about it now. I don't care whether I go home now. I don't let anything worry me now."

"Do you remember how you used to condemn yourself and talk about the terrible things you had done?"

"I saw things outside my window, they looked like animals, like anything but human beings. I saw them at night, never in the daytime."

"Do you suppose you imagined those things?"

"I think they were put there by some of the doctors."

"Why should they do it?"

"I don't know."

"Do you feel now that you are such a bad person?"

"No, I don't feel that I am bad now. I have been cured! Thank God! I have been cured! and I am glad of it."

"Do you remember saying you had no brain?"

"I don't think I have yet."

"I saw it Friday."

"Honestly and truly I have a brain? Thank God! I have a brain. I didn't think I had any. I thought this was an empty box up here."

She went on to say that she felt about 18 years old, that she could not remember when she had felt so good. She declared that she had had no peace for more than four years. She spoke of having constantly had a feeling as of a tremendous weight pressing upon her head but declared that the sense of weight was entirely gone. She no longer reacted to things that previously were so irritating to her. Her attitude was carefree, her mood mildly euphoric. She was interested in plans for her future, but not worried. She was fully aware of the great change and was inclined to be a little emotional when discussing it.

A comparison of the results of psychometric examination done a month before operation with that done three weeks afterward show the two to be almost identical. There was some improvement in practical reasoning ability in the latter. Speed of response was greatly increased at some sacrifice of accuracy.

No post-operative complications arose and the patient left the hospital on March 30.

Since leaving the hospital she has been able to make a most satisfactory adjustment. Upon first returning to her home town she was rather timid about going out. This timidity was quickly overcome and she has entered normally into the social life of the town. The slight euphoria and over-talkativeness exhibited upon first returning home has disappeared. She lives with a sister who is in poor health and she is quite helpful in the household. Her relatives feel that she has entirely recovered.

Comment

This case is one in which the results were entirely those hoped for. The disappearance of agitation and depression in spite of persistence of part of the delusional content, suggests truly a loss of the ability to worry or feel depression. Post-operative course was singularly uncomplicated. Psychometric results before and after lobotomy indicate that it is possible to obtain the effect desired without appreciable sacrifice of intellectual function. It is encouraging to note that there has been continued improvement since the patient left the hospital.

The operation has since been done on two other cases of similar type. In both the results thus far are encouraging, but we feel that it is too early to attempt any prediction as to the outcome. All cases have been equally free of post-operative complications. During the next year we expect to extend our series, and it is our hope that further study will confirm the present promise of help in one of our most difficult problems.

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STATUS EPILEPTICUS COMPLICATING INSULIN SHOCK THERAPY

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The widespread undertaking of insulin shock therapy by a large number of workers in this country has resulted in the appearance of a number of complicating problems, some of which have as yet no satisfactory solution. Such disconcerting and unexpected complications as prolonged non-hypoglycemic stuporous states, for example, have forced those working with this therapy to evolve schemes of management to combat them. The earlier literature from foreign sources was silent concerning some of these serious problems, or treated them only in a general way. Both the European and American literature on these subjects are happily being elaborated now, so that more exact information concerning the experiences of others is becoming available.

One of these complications, fortunately rare, is the occurrence of a status epilepticus, which does not yield to administration of sugar in any form. The earlier works concerning insulin described the occurrence of isolated seizures, and these writers recommended adrenalin and glucose to be given immediately in such cases; but no cases of status epilepticus were described. The seizures themselves are, of course, common. Sakel (1) described them at length, and Lemke (2) in a more recent article, mentions their occurrence in 27 out of 46 patients, which is perhaps about the average experience. Other writers have hinted at the occurrence of a real status, but case reports have been lacking until recently. A case from our own experience will be described here.

J. S., male, age 28, diagnosis dementia praecox. He had been in the present attack for over two years, but had also shown some mental symptoms once over seven years before. He was a morose, uncommunicative individual with some paranoid tendencies. Insulin therapy was started late in 1937; this patient was one of the first group treated by the writer. He went through the first phase of treatment uneventfully, and a state of coma on the tenth treatment day, with 160 units of insulin. On the following day with the same dosage, a convulsion occurred at 9:20 a. m., a little over two hours after the insulin was given, and before any coma had occurred. He received 60 c. c. of a 33% glucose solution intravenously, and later, after recovery, received two tube feedings, containing a total of 205 grams of sugar. He refused other food, however. Again at 2 p. m. and 3:10 p. m., convulsions occurred, and intravenous glucose was again given. At 4:15, following a fourth seizure, the same treatment was repeated and no further seizures occurred.

After three days of rest, treatment was resumed, as some mental improvement was manifest. Two more treatments were passed through uneventfully. On the next treatment, he vomited after lunch but retained eggnog containing sugar. At 4:10 there were a few slight muscular twitchings, but no other signs of shock. He ate a large meal at about 4:30, and apparently felt quite well. At 5:30 p. m.,

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he suddenly had a violent epileptiform convulsion, with tonic and clonic phases and marked cyanosis; he received one c. c. of adrenalin, followed in a few moments by 60 c. c. of the 33% glucose intravenously, and three grains of phenobarbital sodium hypodermically. There was then a series of ten convulsions, three of them very severe, and at 8 p. m., he received 60 c. c. of glucose and following two more immediate seizures, it was decided to administer five grains of phenobarbital sodium intravenously. This stopped all convulsions for about one and a half hours, though twitchings continued. Six mild seizures then appeared in rapid succession, and four grains more of the same drug was given intravenously at 11:10 p. m. Except for two very mild attacks, there were no more seizures until 5:50 the next morning. His general condition had improved with rest, and it had been possible to administer some fluids containing sugar by mouth, though he was somewhat stuporous. During the early morning there was a recurrence of muscular twitchings, followed by four mild seizures; at 7:20 a. m., therefore, a final dosage of five grains of phenobarbital sodium was again given intravenously, and all but a few slight twitchings ceased. The following day, though he was drowsy, his general condition was good. Treatment with insulin was never resumed, as it was believed to constitute too great a risk to life. Subsequently he has made a definite mental improvement, as evidenced both by his behavior and by standard psychometric tests. The Stanford-Binet test, for example, showed a gain of fifteen points with a final I. Q. of 92. At the present time the patient is having some difficulty in making a permanent adjustment outside the hospital, due to environmental handicaps, but improvement is still present, seven months afterward. It is noteworthy that he had only five shocks altogether, and that improvement was not noted until after the first series of convulsions.

An interesting case, somewhat similar, has recently been reported in detail by von Braunmuhl ([3]). This patient was a woman who went through eight shocks without complications, and developed a state of status epilepticus on the ninth, with a dosage of 88 units of insulin. The patient awoke normally, but vomited the tube feeding on waking. Adrenalin was given at this point, though experience has since shown that intravenous glucose is a more proper preventive of complications after vomiting. Within five minutes the first epileptiform seizure occurred, and intravenous glucose was then given. The seizures continued, and adrenalin, glucose, caffeine and strophanthin were administered at intervals. It was not until four severe seizures had occurred that one-half gram of phenobarbital sodium was given; the mode of administering it is not stated. The seizures continued, other stimulants were given, and later a second injection of phenobarbital sodium. The state was finally terminated about three o'clock the following morning, and the patient recovered. Mental improvement was noted for four weeks, following which the patient relapsed to her previous mental state. Of interest in this case is the tremendous amount of various medications which was given. There were repeated inhalations of oxygen and injections of adrenalin, caffeine, lobelin, strophanthin, and camphor; and enormous amounts of intravenous glucose were used, all without any effect on the seizures.

The pathogenesis of these states is still problematical. In our own case, a careful review indicated the possibility that the patient may have been in a long continued state of very mild hypoglycemia, as the evening meal was the first solid food taken, and it may not have been absorbed before the onset of the condition. In the other case cited, it seems more likely that some cerebral irritability produced in the coma itself was responsible. Neither of these patients had been in coma for an excessive length of time. Whatever the origin, it is definitely true that, once established, the state is self-perpetuating and unaffected by administration of sugar. It appears that the continuance of the seizures is adequately accounted for by the presence of an intense irritability of the central nervous system, probably the cortical areas, and thus a vicious cycle is present. For that reason, the prophylaxis and treatment of the condition may be aimed at preventing this state of irritability where possible, by limiting the duration of shock and making impossible a continued hypoglycemic state; and where such a condition has become manifest, by raising the threshold of irritability by recourse to a seda-

tive drug which can be administered intravenously.

Though phenobarbital sodium was the drug of choice here, it is probable that sodium amytal would be correspondingly efficient. The intravenous route is to be preferred in order quickly to utilize the maximal effect of the drug and preclude the necessity for prohibitive doses. An objection to such sedative therapy is, of course, that it may mask the signs of recurring hypoglycemia. In later work, where these drugs are given, it has been our practice to administer a small amount, probably 20 c. c., of the glucose solution about every two hours, until there is no further probability of such an occurrence. In view of the fact that with insulin shock we are usually dealing with an individual without serious physical complications, no bad results may be expected from reasonable use of these drugs. We have also noted that epileptiform manifestations can be halted much more readily if treated adequately and early. Probably not more than two seizures should be permitted to occur before energetic measures, in addition to glucose, are taken to stop their progression. The use of stimulants in addition is, naturally, governed by the condition of the patient. Adrenalin and camphor are theoretically to be avoided because of their possible spasmogenic action. In our own hands, adrenalin has been practically useless in any complications; it has failed to stop epileptiform seizures as well as to have any effect on prolonged stupor or wild psychomotor excitement following shock. It may, of course, be valuable in case of extreme need for a powerful stimulant.

The conclusions of von Braunmuhl concerning the prevention and treatment of these states is similar to those given here, except that he apparently depends chiefly on intramuscular medication. He states that (following administration of glucose) "If one does not succeed with that, and particularly if a new seizure occurs, it is important to support the cardio-vascular system from the beginning. If the epileptic seizures accumulate, one should start immediately with the therapy generally chosen to combat the epileptic status. That is, one should give one ampoule of Strophantose (strophanthin) and one ampoule of sodium luminal intramuscularly. If then symptoms do not subside, one does not wait but gives the same amount of sodium luminal again. It is presupposed that adrenalin subcutaneously and glucose intravenously in sufficient amounts have already been given, as before, during and after the epileptic seizure, the absorption of sugar from the stomach may be insufficient, or may even cease altogether. Even in these very dangerous situations we are, however, sparing of adrenalin, as adrenalin in the presence of a very high blood sugar can cause an increased spasmogenicity, instead of an increase in the blood sugar level, a fact which Sakel emphatically stresses himself."

Since the case described here was treated, a similar scheme of treatment has been successful in aborting at least one other case of beginning status epilepticus. It has also been found useful in preventing exhaustion in the occasional cases where an uncontrollable excitement appears after shock. In any of these complications, no drug should be given without a clear indication for its use; a complicated, unsystematized treatment leads only to physiologic and pharmacologic confusion.

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ON THE CHARACTERISTIC FEATURES OF INSULIN COMA

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A wealth of interesting data on the insulin shock therapy of dementia praecox has been gathered, yet to the critical reader it seems difficult to believe that there exists a unanimous opinion about many problems which the insulin therapy has brought forth. Sakel himself states: "The technical side of the hypoglycemic treatment in itself tells us nothing about the most important factors in the treatment, namely how each individual case has to be managed." In other words, despite a fairly strict outline of the method of treatment, the insulin reaction has to be adapted to the requirements of the individual case, and these requirements are of a complex character. They are dictated by the physical and mental

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status of the patient, by the highly individual type of reaction to the therapeutic agent (the individual shock form) and by its final resonance in the mental sphere.

No doubt, as heterogeneous a material as presented by the vast number of patients afflicted with dementia praecox of various etiology, form and duration, largely handicaps the desire to cling to hard and fast rules and methods of treatment. On the other hand, numerous unexpected difficulties encountered during the application of the insulin therapy cast a shadow of doubt on all too optimistic reports.

On account of so many factors of danger and risk, any actual state of insulin shock or insulin reaction has to be regarded as a critical event requiring the utmost skill and mastery on the part of the supervising physician.

Though the technical part of the insulin therapy has been excellently described and widely discussed, certain rather vexing problems have found relatively little attention and still less satisfactory answers. We possess a large number of detailed reports on clinical observations and clinical results Many satisfactory descriptions of the clinical aspect of the insulin coma are available from the literature Yet none of them excepting very few give information as to the specific features of the onset of insulin coma.

To some investigators the obvious lack of a satisfying definition of the insulin coma has become an object of complaint and worry, and reasonably so. If we want to accurately determine the duration of the insulin coma, we should not be merely contented with a calculation of time depending on the moment of the insulin injection or on the moment we are able to state the first signs of sensorial clouding. We have to fix the moment of the onset of coma as rigidly as possible. We have to know it in order to determine the moment we have to interrupt the treatment unless some unexpected complication arises which forces us to discontinue the treatment before the calculated time. Even for common uneventful types of insulin coma, there is, up to the present, no therapeutically optimal time limit established The duration of the coma, according to Sakel, is prescribed by the rule of safety. In keeping with the classical formula, the insulin coma should not be extended beyond a period of one and one-half hours. Though the majority of the authors have accepted this limit, it has not generally been adopted for various reasons which we do not intend to discuss here.

At any rate, in order to be able to measure the duration of coma, we have to come to an agreement on the phenomenological aspect of the insulin coma. It is no easy task to delineate and classify the multitude of neurological manifestations of the insulin reaction. Many reports deal with the symptomatology of insulin coma in a more or less superficial manner. To some psychiatrists, the neurological study of the insulin reaction is of mere academic value, and is, in addition, a highly dangerous enterprise because of the exposure of the limbs required by various test procedures and by need for closer observation.

One has to realize that the neurological signs, in the insulin reactions, are more or less inconstant and fleeting, yet substantial in constituting the phasic course of the insulin reaction. We owe a valuable guide to the observation of the various types of motor phenomena associated with insulin shock to Von Angyal, whose excellent scheme has been adopted by Frostig and Von Braunmuhl. Other classifications have been introduced by Golden, Feldhofen, Bychowsky and numerous other investigators.

Another troubling fact is that we have only a crude scale of degrees of impairment of consciousness and only arbitrary ways of measuring it. In spite of these difficulties we hope to gain from listening to authoritative advice.

It seems to be appropriate to compare Sakel's classical with non-classical views in an attempt to reach valid concepts as to the understanding of the problem of insulin coma. Sakel (1935) states in his monograph (p. 9) that the state of coma is reached after a period of increasing somnolence which at times may also be interrupted by psychotic excitations. "This coma can attain a varied degree of depth. In the somnolent phase, the patient still can be aroused, yet contact is no longer possible. There are still all reflexes present, one can even, by very energetic calls, induce the patient to a reflex swallowing. Gradually the coma increases in depth. All reflexes disappear.

"Already in this phase, pathological reflexes appear: Babinski, Oppenheim, Mendel-

Bechterew, etc. On waiting longer, coma can attain such depth that all reflexes including the swallowing, corneal and tickling reflexes, even the pathological reflexes which have appeared in a former phase, are extinguished, i. e. complete areflexia with complete muscular atony."

More recently (1937) he said cursorily that "coma should be associated with the absence of the corneal reflex or at least with the presence of a Babinski."

It seems to us that neither the more elaborate nor the brief description of coma is sufficient to establish the transitory phase of the beginning coma. Wilson, in her study (1937), gives the following formulation: "The patient becomes drowsy. He may be regarded as deeply drowsy when he stirs, but does not reply when touched or emphatically spoken to. He may be regarded as comatose when the corneal reflexes have gone. When the light reflex of the pupils is lost, he is in very deep coma—this may be taken, with other findings, as an indication for interruption."

In our own experience, the pupillary reflexes become impaired before the corneal reflexes ever show any definite decrease, and usually the pupils get nearly or completely fixed to light before the corneal reflexes ever become lost. Therefore we often combine the absent corneal reflexes with a deeper state of coma than the lost pupillary reaction. We also found states of coma with corneal reflexes still present.

From Von Braunmuhl's excellent monograph (1938) we quote verbally: "Semi-shock or precoma is present, in our opinion, when in the hypoglycemic state pronounced motor disturbances (clonic jerks) appear, or the patient, on account of his drowsiness, is no more able to drink the sugary liquid himself. Shock or coma is manifest the moment unresponsiveness of the patient to call or to sustained touch occurs, thus the patient cannot be, by any means, brought back to any degree of consciousness, i. e., wakefulness.

"The semi-shock is recognized by observation of the patient as to the appearance of myoclonic phenomena or by testing his ability to drink (M. Muller). The shock or coma is recognized by attempts to arouse the patient beginning with weak stimuli such as calling, shaking or tugging, and then, passing over to stronger stimuli.

"Patients who do not respond any more to a pain stimulus like pinching the arm with defense movements pointing to recognition of the stimulus (hand movements toward the stimulus, fixation of the examiner with the eyes, a 'telling' grimace) are called 'unwakable' (Kuppers)."

Von Braunmuhl rejects M. Muller's idea of counting the shock "from the moment of the inability to drink" as well as that of Frostig who advised to count it "from the moment of the appearance of phenomena of motor irritation." He also regards the testing of the reflexes as unsuitable and unreliable—particularly during the later phases of the insulin reaction.

While discussing motor phenomena, he states, however: "Tonic spasms frequently met with as symptoms of shock, flexion spasms and extension spasms, are signs of deep shock. Since they increase on stimulation, one should, if possible, let the patient alone."

According to Frostig, "Coma is a condition of deepest sopor from which the patient can no longer be aroused by any stimulus. In cases in which the blinking and corneal reflexes have disappeared and a Babinski sign is also present, one can already speak of deep coma."

What about cases that do not show a Babinski at all? Reese and Vander Veer hold that in coma "the patient may move about or open his eyes, but is never in contact with the environment."

If we follow Cameron and Hoskins, "Coma is present when the patient can no longer swallow—when, if he is turned on his side, saliva tends to drool from the mouth, or when, on the eyelids being drawn up, the eyeball is found to be wandering slowly in the orbit."

From these few citations, it becomes evident that the authors have, more or less successfully, tried to differentiate the increasing degrees of sensorial clouding and to mark certain steps in its progression by their relative symptomatology.

To most of them the problem is crystallized around the factor of response to exteroceptive stimulation of various types and intensity. The earliest moment, then, indicating failure

to respond to exteroceptive stimulation, would constitute the onset of coma.

Probably on the basis of Sakel's reports, many authors still seem to attribute a certain value to the study of reflexes; it seems as if their importance has been, at first, exaggerated. In our own view, they still do have some meaning yet only within the specific reaction set of the individual patient.

The same holds doubtlessly true for certain motor or tonic phenomena termed flexion spasms and extension spasms (Von Braunmuhl), pyramidal spasms and torsion spasms (Von Angyal) or merely "spasmodic waves" according to our own nomenclature, a name that seems to do justice to the particular character of spastic-tonic changes occurring in the state of coma.

These motor phenomena, however, merit special consideration.

One has to realize that the state of motor stimulation, just as it does in the well-known types of motor epilepsy, includes and represents a certain sensorial limitation on one hand and a restriction of the capacity to respond to stimuli above the reflex level on the other.

We find this principle verified by a variety of motor phenomena appearing in phases of the insulin reaction prior to coma. Myoclonic jerks occasionally start relatively early and usually are combined with some degree of clouding. They frequently appear in accumulated discharges. As soon as these have passed over—or during the interval periods, the patient may again be as well responsive as before.

During states of violent psycho-motor excitation so frequently combined with unusually noisy reactions, the patients' rapport with his environment is markedly decreased.

During the phase which is characterized by the presence of primitive movements in the oral sphere, by grimacing, primitive pseudo-hysterical movements of the body and limbs we find a regression of the speech mechanism as well as a distinct sensorial deficit, indicating precoma.

The "spasmodic waves" represent an analogous phenomenon to the state of coma, as already stated above.

We may be allowed to stress again the importance of this particular point: During any phase with increased output of motor energy, we are apt to find a sensorial deficit according to the type of the motor phenomena that is characteristic of a special phase of the insulin reaction. Thus, our methods of testing stimulus responses are likely to yield more reliable or other results in "quiet" comas than in comas with marked motor reactions.

On the other hand we see no reason to discard certain types of motor phenomena as means of determining the actual phase or degree of sensorial clouding. Though multiform in appearance they are extremely impressive, to the experienced observer not less than to nurses or attendants who are in charge of the "insulin group." Spasmodic waves are occasionally mistaken for epileptiform reactions by the less initiated. Their very onset gives us, though still an arbitrary, yet reliable time mark.

Other valuable marks are recommended by Cameron and Hoskins (see above). Drooling of saliva is significant in many patients, its first appearance fixing fairly reliably the onset of coma. Unfortunately some patients of our observation have never shown it regularly. The slow wandering of the eyeballs in the orbits, recognized by Von Angyal as an abortive torsion phenomenon, would serve, on its first occurrence, the purpose of determining the onset of coma as well as other tonic or torsion phenomena.

In agreement with Von Braunmuhl, there is no real need for a drinking trial though it may be of value as a test of precoma. The average patient disposes of his saliva in a natural way: by reflex swallowing or by reflex coughing. We can accelerate the drooling of saliva by passively turning the head to the side, knowing that the abundant production of saliva in the absence of regular swallowing is a fairly reliable characteristic of the onset of coma. As a matter of fact, we do not believe that we are in need of a drinking test for any phase of the insulin shock, and particularly for precoma where the degree of clouding can only be speculated.

Our own idea about the problem of the determination of insulin coma may be summarized as follows:

A. There is no single abnormal neurological sign that is indicative of coma.
B. Though one may find a set of altered

reflexes in coma, it is not admissible to conclude from the reflex changes, the degree of clouding.

C. The insulin coma is practically a final link in the chain of progressive clouding which, in turn, is at least a partial expression of changes involving the central motor sphere (by analogy with epilepsy).

D. Thorough knowledge of the various tonic, motor and reflex phenomena will help to define the onset of coma in the individual case.

E. Drooling of saliva from the mouth has, in the writer's experience, been a reliable time mark for the onset of coma in all cases manifesting it.

F. The determination of insulin coma by result of absence of response to exteroceptive stimulation is, as a sole test, insufficient and arbitrary.

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A CLINICAL STUDY OF A CHILD WITH PROBLEMS

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The study of the child with problems has been given a major place in the field of mental hygiene. The complexities in behavior that arise as the child emerges from the undifferentiated responses present at birth to the forms of more specialized behavior attending the processes of physical, emotional and mental maturation are manifold even in a relatively normal child, but in the child with problems they challenge the diagnostic skill of the keenest observer. Diagnosis becomes increasingly difficult because stimuli activating dynamic behavior are not specific, variability in the type of response being determined by multiple and complex factors, such as the age and health of the individual, his previous experiences and his mental endowment, as well as by environmental factors. Since behavior is the summation of the responses of an individual as a whole to stimuli arising both from within and from without, it follows that its interpretation demands an analysis of both the dynamic and the genetic aspects involved. Such an approach to an understanding of behavior divides itself logically into a study of the situation to which the individual must react, and a survey of both the assets and liabilities which the individual possesses to react with.

The following case is presented because it offers many possible etiological factors from which a selection of the predominant cause or causes of the child's problems must be made. A thirteen-year-old boy is referred primarily as a school problem because he is lazy and making poor school progress, is easily discouraged, nervous, seclusive and not interested in the usual healthy activities of boys. He is unable to concentrate, lacks all interest in school subjects and does not even make an attempt to do his daily assignments. He began school when six and one-half years of age, repeated the fourth grade and is now in the sixth grade. His scholastic progress has always been slow but his work this year is so poor that he will probably not be promoted.

In appearance the boy is attractive, and clean and neat in dress. During formal interview he is quiet in demeanor and offers but little spontaneous information. Answers to questions are brief, inadequate and frequently evasive. He does not discuss his thoughts or emotions. He neither criticizes others or displays any self-criticism. He is easily distractible and gives the impression of being preoccupied. He exhibits no appreciable variation in emotional tone. He remains consistently unobtrusive.

All available information indicates normal birth and development. His health has been very good. Except for the usual diseases of childhood he has had only one other illness, a chorea three years ago, which, since he was not compelled to discontinue school, may be

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assumed to have been of a mild nature. He still suffers from nocturnal enuresis.

His parents separated when he was two months of age. His mother supported herself and her child by working as a domestic. She obtained employment in a home where she was permitted to keep the boy with her. He amused himself with his toys and in other solitary play. She did not permit him to play with other children as he grew older and the only contacts he had with children of his own age occurred when his mother visited relatives or friends. On such occasions he showed timidity in the presence of adults, but took part in play with the children though he always followed their lead and never initiated new activities. When he began school he was sent to live with his father and paternal grandparents. During the summer vacations he returned to his mother. She noticed that he was no longer as obedient but frequently defied her and she thought that he was becoming unruly. She consequently decided after two years to again assume custody. She states that she soon re-established satisfactory discipline without undue difficulty. His father still visits him regularly but at very infrequent intervals. The mother said that the father never liked the boy, never treated him well and even went so far as to tell the boy that he doubted being his father.

About the time the boy returned to his mother she remarried. The man she married was divorced and had a small daughter. The boy is reported to be very fond of his step-father and step-sister. Neither the mother or step-father shows favoritism toward either child and their home life gives the impression of family solidarity.

No direct contact with the boy's father is possible at present and the only estimate of the father's personality is made from information furnished by the boy's mother. She described him as a man without ambition or interests. He made no attempts to shoulder responsibility. He always depended upon his own mother for help. The history of the boy's mother indicates an early social maladjustment, but her behavior since her second marriage has been above criticism. She volunteered the information that her mother and a sister are mentally deficient.

This brief social history represents but a short summary abstracted from a large amount of material of what may or may not prove to be important in the production of this boy's deviations from the relatively normal in temperament and behavior. It suggests many questions and the answer to any one may or may not point the way to diagnosis and treatment as well as to prognosis.

The most important questions group themselves around the following considerations: A, heredity; B, feelings of emotional security; C, the relationship between the boy and the group; D, the boy's interests; E, the relationship between the boy and the school; F, the boy's intellectual endowment.

The answers to these questions are obtained not only from the social history but from an evaluation of facts ascertained by a psychometric examination given by the psychologist, and psychiatric interviews by the examining psychiatrist.

Discussion of the above topics will be considered in the order of their formulation.

A. Heredity. We have learned that the boy's father is probably a maladjusted, unstable individual with personality defects. We know that at least two members of the mother's immediate family are mentally defective. While such facts are far from conclusive, they cannot be entirely ignored as possible hereditary determinants in the boy's behavior.

B. Feelings of Emotional Security. The infant is born into an alien world, the most helpless of mammals; for a long period dependent upon parent or parent substitute for safety and protection. Feelings of security are communicated to him through the channels of parental love. All situations which interfere with the communication of this love, whether they be conflicts between or within the parents, their separation or their death, or whether they be caused by the pressure of external circumstances, can diminish or destroy the feelings of satisfaction the child should find in the love of its parents. As the child matures it requires freedom for the exercise of increasingly complex functions. The over-solicitous and over-protective parent may prevent a child from ever reaching emotional maturity; the over-strict parent may provoke antagonisms for which the grown man or woman

must answer; too frequently with disastrous consequences. The child must be given an opportunity to gradually become an independent being capable of competing in an unkind world. All striving is toward a goal. The child cannot formulate an ideal but must accept the ideal it finds at hand, whether that ideal be high or low. It is a function of the parent to serve as the concrete embodiment of this ideal. Unless the parents fulfill these three important conditions the child may be expected to display personality problems.

The social history of the boy whose problems we are attempting to understand indicates interference with all three of these conditions: (1) the satisfaction of parental love may have been influenced by the separation of the parents and the father's suspected rejection of the boy; (2) the mother may have inhibited or suppressed the boy by curtailing his opportunities for social contacts with other children during the first six years of his life; (3) as far as we can judge the father did not present satisfactory ideals. We need not depend only on the mother's statement that the father disliked the boy and treated him unkindly. Though the boy was not productive in talk, when questioned on this subject he said, "I guess my father does not like me." When asked his reason for believing this he was unable to elaborate further than to say "From the way he treated me." The discussion of this topic produced no discernible emotional reaction. That the boy's feeling has a basis in reality must be accepted, since he has not heard his father's behavior discussed by others. When asked whether he likes his father he quickly answered, "I like my step-father." Whether a real rejection of the boy by the father exists because the father wants to avenge himself on the mother, whether, after all, the mother's attitude has produced a feeling of rejection in the boy, or whether there even is a true rejection, would not modify the effect upon the boy as long as he believes that he holds no place in his father's affections. But not all children subjected to such an emotional situation show identical responses. Where one child may develop retaliative behavior another will seek affection elsewhere, while yet another may remain immune to personality defect. Further details of the relationship between the boy and his step-father indicate that the boy feels no lack of affection. Though the mother is a nervous type of woman she has been affectionate, kind and patient. Since her second marriage, which took place when the boy was seven years of age, she has not been over-protective. Her husband is an intelligent individual, with a keen insight into the boy's problems and both have given him every opportunity for normal adjustment. Both maintain standards of behavior acceptable as ideals. Yet the boy gives little tangible evidence of identification with either. Nevertheless, the family interrelationships present a solidarity in which we may feel assured that the boy feels emotionally secure.

C. The Relationship Between the Boy and the Group. Though the boy is well liked by other boys he takes no initiative in forming friendships and contributes nothing toward group activities. He never defends himself but runs away from a fight or the prospect of a fight. This is significant in view of the mother's information relating to his serious maladjustment for the first two years among the group in the school to which he changed following his return to her. She states that "he had a terrible time; the boys teased him and fought him, just to see him run." It is also significant that he has formed but one solitary friendship with a boy who also presents a serious problem in that he has a schizoid personality and an extreme defeatist pattern of response. Recently he has shown some interest in playing ball with a small team, but this end was achieved through the persistent encouragement of his step-father. The boy's attitude toward the group as expressed during formal interview was one of indifference rather than one of either like or dislike. His parents have forbidden him to associate with his one chosen friend. He relates this without show of resentment, apparently submissive to their wishes without question or defiance.

D. Interests. Parents and teachers alike particularly note the boy's lack of interests. In school this lack of interest is expressed as seclusiveness in group activities and in scholastic subjects ranges from poor concentration and easy distractibility to an inability to make an attempt to do assignments. Though he

does not remain idle at home his participation in any one form of recreational activity is fleeting. When asked what he likes best he replies after long hesitation, "fishing." He usually goes fishing by himself. His preferred interests are those by which he can amuse himself alone or with his step-sister since he has been forbidden the companionship of his only friend.

E. The Relationship Between the Boy and the School. In spite of his lack of interest in school subjects the boy does not dislike school. Neither does he dislike his teachers. His attitude is one of expectation of failure and he requires constant encouragement to sustain effort. He feels so inadequate that he cannot make a spontaneous effort.

F. The Boy's Intelligence Endowment.

Terman Vocabulary Test:	CA: 13-0	MA: 12-0	IQ: 92
Cornell Coxe Performance:		13-4	102
Goodenough Drawing Test:		10-6	81
Stanford Binet Test:		11-8	90
Digits Reversed:		8-9	67
Reading grade	5.8		
Spelling grade	4.7		
Arithmetic grade	4.7		

The tests rate this boy average in intelligence but reveal deficits in certain mental processes. The psychologist states that his ability in handling concrete manual tasks is not only average but even, but that he encounters definite difficulty in dealing with abstractions. His observational powers seem to be limited. This may be due to disinterest and lack of sustained concentration.

Achievement is below grade placement in all subjects. Arithmetic is inferior because of lack of sustained effort and inability to deal with abstractions. The lower spelling grade may be a function of poor auditory memorizing ability.

SUMMARY

We are now ready to summarize and evaluate our findings, bearing in mind that a child's problems are an expression of a dysfunction in which the whole organism is involved and not ordinarily the outcome of any one isolated component.

A physical basis for this boy's problems could not be demonstrated. He possesses a strong, sound body, free from discernible neurologic defect. From the phychogenic viewpoint we observe a boy of average intelligence whose mental state is best described as autistic, characterized by poor attentional control and profound lack of interest. In his behavior he presents to a marked degree the defeatist pattern of response. He seems weighted down by feelings of inadequacy and a sense of frustration.

This case illustrates lack of inspirational values, lack of satisfactions gained from successful achievement, and an absence of anticipation of reward and praise. These deficits have been most apparent during the valuable formative years marking a transition from infancy to juvenile life. During the years in which he should have had freedom to experience healthy give and take relationships with other children he was denied this opportunity. The boy's social attitudes were determined largely by his lack of experiences before he started to school. The knowledge of rejection by his father during at least his first two years of school life accentuated these attitudes. His learning habits are undeveloped because of temperamental deviations produced in the main by environmental controls. It is noteworthy, in view of his disinterest, lack of concentration, and absence of incentive and reward that he has achieved his present level.

This boy is in need of individual coaching, which may be confined to any one subject, not so much to gain a mastery of the mechanics of learning a certain subject as for the amelioration of temperamental deviations to be obtained by giving him inspiration and the hope of success and reward. He is in need of special guidance in play technique with a select group of boys from which he may derive the benefits of competitive play and feel the satisfaction of successful performance.

CONCERNING SEDATIVES

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In any hospital caring for mental and nervous patients the problem of quieting the agitated, noisy and sleepless individual is a major one. Extremes of overactivity must be controlled both to prevent the individual patient from exhausting his own reserve nervous vitality and also to prevent him from re-

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tarding the recovery of other patients who must live on the same ward with him.

Ideally the overactive, and usually noisy, patient may be rendered quieter by one or more of several procedures. If he is not extremely agitated, some form of handiwork, complex enough to interest him and simple enough not to overtax him, may produce the desired result. If by such a method we can induce natural fatigue and sleep, we may consider the problem most happily solved. Unfortunately, however, the situation is not usually so simple.

Hydrotherapy either in the form of a wet pack or the continuous tub is a splendid sedative for the excited manic whose physiological functions are intact, but it is obvious that the number of patients who can be thus cared for must always be somewhat limited by physical considerations and that its use is usually altogether impracticable in private practice.

Physical restraint while it may temporarily prevent the patient from injuring or exhausting himself or doing violence to others is at best a makeshift to be resorted to only when other methods have failed, or in emergencies. Its long continued use is generally to be regarded as pernicious, though there are patients for whom it seems to offer more good than harm. A patient who persistently saturates her entire body and clothing with water is probably better kept in a light fitting camisole than under the continuous influence of hypnotics. The seniles who dig into their own flesh or tear their clothing to shreds until they are practically unclad present problems which are probably best met by restricting the movements of their hands with mits or light canvas restraints. When the balance is struck, however, there still remains a majority of our disturbed patients for whom we must depend on chemical sedatives and hypnotics.

While the number of individual drugs which from time to time have been and still are used as hypnotics is very large, they may be grouped under the following heads: the bromides; the alcohols and aldehydes; the sulphones; the barbiturates; the narcotics.

In our present relatively advanced state of physiological chemistry one might suppose that the pharmacologist would be able to provide us with some exact statement of relationship between chemical structure and hypnotic activity. Such, however, is not the case. For the most part we are left to wonder just why a substance possessing a certain formula should have the physiological effect it does. This much, however, does seem to be clear. The bromine ion, the ethyl radical [C_2H_5] and the urea grouping [$CO(NH_2)_2$] to judge by the frequency of their appearance in this group of substances play some role in depressing the activity of the nervous system. The precise degree of solubility in the lipoidal substances of which much of the nervous system is constituted is also a determining factor. On the other hand there are drugs of definite sedative power whose activity cannot be explained by either their solubility preferences or their chemical structures. Concerning these entities the chemists simply say at the present time that the pharmacologic action is presumably a "whole molecule" action. Beyond these elementary admittedly unsatisfactory statements it is not safe for the nonchemist to go at the present time.

Though most practitioners doubtless have their own conception of what an ideal sedative-hypnotic should be, it would probably not be amiss to enumerate the characteristics which are generally regarded as essential in a clinically satisfactory hypnotic. Briefly, such a drug must be sufficiently rapidly absorbed to act within a reasonable period of time, and it must be sufficiently rapidly destroyed or excreted to prevent its continued action over unduly long periods of time. It must be free of dangerous or unpleasant side actions. It must not be habit forming, and finally, the margin of safety between the therapeutic and the toxic and the minimum lethal dose must be sufficiently great to render serious accidental overdosage practically impossible.

The bromides are, strictly speaking, sedatives rather than hypnotics. They block motor excitement. They have an anaphrodisiac effect and, by their general quieting influence, induce rather than compel sleep. They tend to be slowly eliminated, only about 25% of the amount ingested being excreted in the first twenty-four hours, and total excretion often requiring ten to twenty days. Thus,

their cumulative effect must be thought of when they are prescribed, though this factor is to some extent offset by the relatively large doses which can safely be taken. The clinical efficiency of the bromides can be increased by simultaneously feeding the patient a salt-poor diet due to the fact that the bromide ion will then replace the chlorine ion in the tissues more rapidly and thus favor a quicker bromide tissue saturation.

In the alcohol group of sedatives, ethyl alcohol itself in its various forms has a sharply limited field of usefulness, owing largely to its well known side actions, its habit-forming quality, and the consequent wide spread strong social prejudice against its use in any form. The only other important members of this group are paraldehyde and chloral hydrate. Paraldehyde, though an excellent hypnotic from many points of view, has fallen into disuse in many quarters because of its irritant effect on the stomach and also because, being partly excreted through the lungs, it imparts an offensive odor to the breath. Chloral hydrate owes its loss of popularity to its depressing effect on the pulse rate and blood pressure, its action as a gastric irritant, and its slight though definite tendency toward habit formation. In spite of these qualities, however, it remains a drug which will probably always be widely used in small dosage and combined with other sedatives, notably the bromides, because of the rapidity and certainty of its action-factors which are often of great practical importance in emergency situations.

Sulphonal and trional, chronologically the first important substitutes for chloral, are relatively simple chemical entities. In the case of sulphonal we have four carbon atoms, two of which are bound to ethyl sulphone radicals and two to methyl radicals; trional is identical in structure except that one of the methyl group of sulphonal is replaced by an ethyl group. These substances are mild in action, non irritating and free from deleterious side actions including the so-called "hang over" effect and would constitute almost ideal hypnotics were it not for the fact that they are slowly absorbed and even more slowly excreted. Thus their continued administration is very likely to result in an accumulative effect which demands that their administration be interrupted by frequent periods during which some other hypnotic must be substituted.

Considering next the barbiturates, we come to a group which comprises so great a number of individual preparations that it is impossible to consider each of them separately. Developed for the most part within the past decade, they are a group of urea derivatives in which various sedative groupings have been introduced into the urea molecule in an effort to produce maximum hypnotic and minimum toxic effects. The chemical formulae of some of the more widely used barbiturates may be of interest and are as follows: barbital (Bayer's Veronal), ethyl ethyl barbituric acid; phenobarbital (U. S. P.), phenyl ethyl barbituric acid; alurate (Roche), allyl isopropyl barbituric acid; dial (Ciba), allyl-allyl barbituric acid; amytal (Lilly), isoamyl ethyl barbituric acid; ipral (Squibb), isopropyl ethyl barbituric acid; and many others. This brief list, however, serves to illustrate the manner in which chemists have attempted to synthesize something approximating an ideal hypnotic by creating a varied group of modifications of barbituric acid, which is itself malonyl urea.

As the above formulae would lead one to believe, the various members of this group do possess individual characteristics which give them certain clinical advantages one over the other in different practical situations. This phase of the subject will be briefly touched upon later. In general, it may be said that their most important differences are speed of action, intensity of action, and margin of safety. With reference to margin of safety, all of them which are now widely used possess an adequate margin when used within dosage limits as indicated in the commercial literature which is packaged with them.

Lastly there are the narcotic hypnotics. Pantopon, an injectable whole opium preparation, is claimed to be preferable to morphine because of its lesser tendency to produce vomiting and constipation, as well as because of a less depressing action on the respiratory center. Like morphine, however, it is definitely a habit-forming and demoralizing drug and is therefore to be deliberately avoided except in extreme situations calling for the relief of un-

bearable pain, or in its well-known role as a pre-operative sedative. Morphine itself is too well known to require comment. Hyoscine hydrobromide is a valuable drug because of the fact that it can be given hypodermically, because of its prompt action, and because of the certainty with which it decreases the motor activity of the assaultive and destructive patient. Its chief danger lies in the fact that, in elderly and arteriosclerotic patients it is not unlikely to produce sudden and serious collapse, occasionally requiring energetic measures to avoid a fatal termination.

In everyday use on the wards this group of drugs has come to have certain well recognized usages.

In epilepsy, the bromides and phenobarbital are regularly given to reduce, or if possible, to prevent altogether the occurrence of convulsive seizures. In status epilepticus, phenobarbital sodium given intravenously to effect is usually successful.

In excited hysterical states, bromides in fairly generous dosages may prove adequate. If not, they may be replaced by one of the milder acting barbiturates such as sedormid (a simple urea derivate not previously mentioned, whose chemical name is allyl iospropyl acetyl carbamide).

Excited manics, or catatonic praecoxes, react favorably to one of the stronger barbiturates, such as amytal. Occasionally, when the patient is extremely disturbed, the intravenous injection of the soluble sodium amytal at intervals for the deliberate purpose of keeping the patient under the influence of the drug for prolonged periods ranging from twenty-four to seventy-two hours is attended by very satisfactory therapeutic results. Obviously when such a procedure is undertaken attention must be given to the evacuation of the patient's colon and bladder. The writer has seen this same technique prove the turning point toward recovery in a severe case of involution melancholia characterized by a profound agitated depression. The free administration of fluids, either by Murphy drip or hypodermoclysis, is an important adjuvant to to the prolonged sedation in the involution cases.

In the stuporous inaccessible states of catatonic dementia praecox, intravenous injection of sodium amytal in dosage of 3½ to 7 grains has been noted to produce an almost dramatic change in the patient's reaction. In relatively undeteriorated cases, lucid intervals approaching the normal often result. Unfortunately, as the drug wears off the patient returns to his previous catatonic state, so that the chief value of the drug is to render temporarily accessible a patient about whose mental processes we might otherwise have remained entirely ignorant.

For the patient suffering from insomnia, evipal or seconal, because of the relative promptness of the onset of their action are very useful. In the more severe grades of insomnia, however, where the patient requires a more prolonged action to prevent his awakening after an hour or two, it may be necessary to combine these quick acting members of the series with some having a more prolonged effect, such as sodium amytal or phenobarbital.

In conditions of sleeplessness due, in part at least, to pain, the combination of one of the barbiturates with some substance such as amidopyrine, phenacetin or aspirin usually proves more effective than the administration of the hypnotic alone.

Seniles as a group must be treated with the milder sedatives, and heavy dosage of any drug generally avoided, due to their usually feeble state. Morphine in particular is contraindicated, and here, more frequently than among the younger patients, shows the excitatory reaction which it is occasionally known to produce. Hyoscine is particularly likely to produce serious collapse. In general the use of bromides, or the mild acting sedormid is advisable with the aged. In those patients tending to show night wandering and daytime drowsiness, all sedatives should be administered between 4 and 10 p. m. in the hope of re-establishing to some extent the normal sleep rhythm.

For early senile cases, as well as the neurotics, sedobrol (Roche) which is a beef tea bromide preparation, makes a gratefully received mild but effective sedative drink when given on retiring.

Recently, hyoscine or stramonium, in combination with small but gradually increasing doses (¼ to 1 tablet q. A. M.) is being em-

ployed to control the tremor of postencephalitic Parkinsonism, with some promise of success.

In conclusion, it may be repeated that the ideal sedative does not exist. Habituation, the development of tolerance, a tendency to cumulative effects, and the depression of the vital functions characterize all of them in greater or lesser degree. Useful though they are, indeed almost indispensable in many cases, they are properly only to be looked upon as temporary measures to be resorted to until nature and a more constructive therapy can be brought into play. When their long continued usage appears inevitable, it is usually good policy to change from one drug to another from time to time; and it is always good policy to terminate their use altogether as early as practicable.

THE HOMICIDAL INSANE

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Every psychotic patient who displays assaultive tendencies is a potential killer. A patient may have paranoid delusions and, for self protection, may try to get rid of imaginary enemies and persecutors. As we see in dementia praecox, paranoid condition, and other psychotic states patients under the influence of hallucinations may act impulsively and do harm without any intention. The same may happen in clouded epileptic states or in hysterical twilight states. In a properly organized and supervised mental hospital it seldom occurs that patients with such tendencies have a chance to harm anybody because measures of precaution and protection are taken. The patients are watched and supervised carefully and if necessary secluded, according to their condition, permanently or temporarily. They are prevented from getting hold of a dangerous weapon. While in the hospital they receive special treatment which their mental condition requires or symptomatic therapy such as hydrotherapy, narcotherapy.

The following five histories of homicidal patients serve as example. All of these patients displayed psychotic symptoms a long time before they committed a homicidal act. Some of them had frictions with law and were kept on probation for awhile. Others were considered strange and queer by people who came in contact with them, but due to ignorance and carelessness they were not submitted to psychological study or kept under psychiatric observation. After having carried out their criminal deeds they were treated as criminals and sentenced accordingly. These people actually did not realize what was right and wrong, their minds were distorted by delusions or hallucinations. One cannot expect that these people will understand why they were held in prison. The only proper treatment is a mental hospital which is apt to modify their behavior. Sometimes they are kept in prison for years, and only when their mental symptoms are recognized they are transferred to a mental hospital and often it will be too late for an effective treatment by that time.

The histories of our cases are taken from the records of the Delaware State Hospital.

Case 1—D. M. (Col.). A farmer, was committed January 14, 1922, at the age of 38. He was brought from the penitentiary for observation. Patient shot and wounded two of his brother's children. One of the children died later. He actually attempted to kill his brother. Patient declared that his brother tried to poison his pigs and to damage his property. The family history shows that one of his uncles was an inmate of the Delaware State Hospital on three occasions, with a diagnosis of recurrent mania. Another one of his relatives is at the present time an inmate of the Delaware State Hospital, with a diagnosis of dementia praecox. Patient did not show any abnormal trends during his childhood. He had an elementary education and reached the 5th grade at school, at the age of 17. He was not a school problem. He became a sober and industrious farmer. He was a likeable man, but stubborn and had a very determined disposition. In all his actions he thought he was right. He never had any trouble with court. In 1917 patient submitted himself to an operation for removal of a bullet which had been in his skeleton since the age of 5. Soon after this operation patient was confined to bed with pneumonia. He was very seriously ill and displayed psychotic symptoms, was apprehensive, and frequently cried.

A definite change of personality was noticeable after he recovered from pneumonia. He became more seclusive, depressed, avoided any

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contact with people, and spent most of the time in his room, reading the Bible. He expressed the idea that people were after him. He resumed work as a farm hand in Middletown, but his mental condition gradually grew worse, and he soon had to return. While on his way home he was very hallucinated, he lost his baggage on the train and arrived home in a very excited and apprehensive state. At that time he feared that poison was put in his food, and he quarrelled with his brother; however, he never displayed any violent acts until one night when left with two of his nieces he suddenly, without any warning, started to shoot and killed one of his nieces and wounded the other one. At the same time he set fire to another farmer's barn.

After his admission to our Hospital he showed definite antisocial tendencies, he was rather unfriendly, sullen, resentful, contrary, suspicious and reticent. He did not appear to realize the seriousness of his crime. On several occasions he plainly stated that he was framed. "I have not done anything to be locked up here. There is something wrong with the laws of the state. They claim that they have laws to punish a certain class of people and that the other class of people do as they please." The case was diagnosed as paranoid. At present he is adjusted to the ward life, is very industrious, but he does not participate in social affairs; he even refuses to go for walks.

Case 2—This boy was admitted for observation November 2, 1932, at the request of Attorney-General. On November 5, 1932, at the age of 12, he shot and killed his father. Both of his parents were known as alcoholics. Patient's home environment was regarded as very poor. There was a constant friction between the parents. They frequently changed their residence. Since infancy patient was very delicate, and he was seriously ill with cholera infantum at the age of 2. Shortly after. he had nervous fits. At the age of 4, he had a prolapse of the rectum, and he suffered from enuresis until the age of 11. At the age of 6. he entered school, but never progressed further than the second grade. He was unable to learn to read or to write because he had a reading disability and is left handed. For these reasons he was very slow at work and was always difficult to handle. In the classes he appeared nervous, restless, would often get up and move around the room without permission. He frequently played truant, associated with youngsters known as bad boys, and had a habit of threatening the younger children; he frequently treated them cruelly. He finally was relegated from school temporarily; he reentered in 1932. It is interesting to note that he underwent a psychometric test Jan. 8, 1932, and his I. Q. was 71, and he was considered to be of dull normal intelligence.

Patient was committed to the Hospital after he committed the crime on November 5, 1932. On that morning his father and mother had been drinking heavily. Patient did not clean the stables as he had usually done; instead, he went with his dogs into the woods. When he returned from his walk his father threatened to beat him. The boy got hold of a gun and shot his father in the back. This patient has been diagnosed as epidemic encephalitis on the basis of the results of his neurological examination. He remains rather asocial and unreliable. He defies authority. He promises to behave correctly, but soon breaks these promises. Because of assaultive and destructive tendencies he has to be secluded or restrained frequently. He does not accept advise and has spheres of irritability. At times he realizes that he loses control over himself, but he thinks he is normal mentally. On Oct. 8, 1936, while working outdoors, he escaped and two days later he was picked up and returned by the police.

Case 3—D. F. was committed June 9, 1931, at the age of 37. He was a tailor by occupation. Patient killed his brother-in-law, and was transferred from the New Castle Workhouse. The family history shows that patient's father was always considered queer. Patient immigrated with his parents when 17 years of age. He worked in a barber shop until he was drafted in the Army and sent over seas, where he worked as a company tailor. On his return he opened a tailor shop in Wilmington. He was considered queer and strange by his neighbors, because he often talked to himself or imitated gunning with a broom. Many people were afraid to enter his shop. Court record: In 1921 he served three months in the Workhouse for carrying concealed weapons; he was arrested March 4, 1927 for dis-

orderly conduct, and paroled for a period of nine months. He was said to have followed school girls on the street.

Patient accused his brother-in-law of having mistreated his sister, who actually died from pneumonia, according to the necropsy report. Patient declared that his sister died from an injury which she sustained when her husband hit her in the face. Patient is diagnosed as a paranoid condition case. He appears nervous, fidgety and trembling; he talks a broken and barely intelligible dialect. His frequent letters addressed to court officials contain unintelligible complaints. He appears sociable and friendly in his demeanour.

Case 4—N. T. This colored man, born in 1913, was admitted Jan. 5, 1937. His occupation was farm work. On June 30, 1935 he killed another colored man in a fight, while drunk, by stabbing the man to death with a pen knife. He was sentenced to two years in Kent County Jail. His term expired Oct. 27, 1937. Patient went to the 8th grade in school. He always was attached to his mother and sister, appeared rather shy, oversensitive, quick tempered. Until 1929, he usually preferred to stay home and did not like to mingle much with other people; he did not have any love affairs. In 1929 he showed some change in his behavior, when he frequently participated in social drinking and associated with people of ill repute. His parents disapproved of this, and he became involved in quarrels with his parents over this. On one occasion he even tried to kill his father. On April 15, 1933 he was arrested for carrying deadly weapons. He pleaded guilty and was paroled for one year. It was never found necessary to submit him for psychiatric examination. This patient was diagnosed as a dementia praecox, paranoid type. He is very grandiose and bizarre in his delusions. He contends that he has been put in the hospital by the government to try out how much electricity he can stand and this makes him a soldier. He claims that he is supposed to get a monthly salary from the government. He shows definite paranoid reactions, states that different people want to kill him, that his parents are against him. Even in restraint he has assaultive and violent outbursts, requiring sedative drugs. He shows a very stolid expression. He varies in his behavior—one day he is friendly and reserved, the next day morose, noisy and out of control.

Case 5—W. O. was admitted June 9, 1937, at the age of 41, following conviction of the murder of a man on Feb. 5, 1932. He was also wanted for murder in the states of Virginia and New Jersey. Born in South Carolina, he did not attend school for a long time, and cannot write well. He always worked as a farm laborer. He was drafted for the Army in 1917, one year after his marriage. When he was discharged from the Army in 1919 he returned to his wife and he found that she had been having an affair with another man. He killed the man, and escaped the authorities. From 1926 to 1930 he worked on a railroad, and not much is known of his life during that period. He travelled around in many states. He killed a woman with whom he had a love affair, claiming that she cheated him. Thereafter he lived in Delaware, and in February 7, 1937, he was arrested for killing a colored man in Wilmington in May, 1932. Patient manifested psychotic symptoms, and became depressed, fearful, excited. He declared that the prisoners were against him, that they wanted to kill him, that the doctor had robbed him. He appeared hallucinated, expressed reference ideas. Because of his condition he was transferred to the Delaware State Hospital. In 1931 his psychometric showed him to have an I. Q. of 43, and he was classified as a high grade imbecile. He still displays paranoid delusions, and is diagnosed as paranoid case in a mentally deficient individual.

All of these cases presented manifest psychotic symptoms previous to their homicidal acts. If they had been submitted for observation to a mental hospital at the proper time much trouble would possibly have been prevented. The first of these patients were mentally ill for five years, and the members of his family knew about his condition, but did not look for psychiatric advice. The second patient is from a tainted family, a delinquent child suffering from a definite organic brain disease. The third patient displayed psychotic symptoms for years before he committed a murder, but he was never referred for a psychiatric test. The fourth patient's diagnosis was made in jail as he served a two year

sentence. The fifth case committed three murders in different states, and lived in Delaware for years without being identified. Finally, after he committed his last crime, he was arrested. At the time of his arrest a psychometric test was performed, the results giving evidence of mental deficiency; however, he was held responsible, and sentenced for life. After remaining in the Workhouse for several years he openly manifested psychotic symptoms of paranoid nature, which at present time appear to be recognized.

We may call our patients criminally insane who actively are psychotics, whose minds are disorganized because of their sickness. Their behavior is just a manifestation of their disease, and naturally they should be treated in mental hospitals.

INSULIN SHOCK THERAPY: A CASE SHOWING UNUSUAL FEATURES

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The case reported here is one treated by Sakel's hypoglycemic shock method which is noteworthy for the large number of seldom-seen phenomena presented during treatment, as well as for the serious psychic problem which remains after treatment has been concluded.

This patient is a white woman, 38 years old when the treatment was applied, and who had presented signs of a beginning psychosis approximately nine years before. She had been hospitalized continuously since December, 1930. Her father and one brother are said to have been alcoholic. Little information was ever obtained about her very early life; we do know that she had syphilis in 1919 (at the age of 19); this was apparently treated adequately, and blood and spinal tests have since been consistently negative. She went to high school and business college, then worked as a stenographer, bookkeeper, and governess until her marriage at 28. The husband stated that she had been "nervous" ever since he had known her. The patient's own statements, made after mental symptoms began, indicate that she led an irregular sexual life after the age of ten.

The first mental symptoms appeared about a year after her marriage. It is said that soon after the death of a brother, at about this time, she began to complain of physical symptoms, became confused, and though unnaturally quiet if left alone, would impulsively attack anyone who urged her to any activity. She spent a short time in a private hospital in Philadelphia, where she was reported depressed, agitated, and worried about the possibility of syphilis. She went home for a short time but soon returned in an agitated and self-accusatory state; she attempted to choke herself, became confused and untidy, masturbated, assaulted others, and refused food. She was transferred to the Delaware State Hospital in 1931 and has been hospitalized ever since.

When admitted she was resistive and violent, kept her eyes tightly closed, and would not accept food. She was usually quiet when left alone, but would violently attack anyone who entered her room. She was untidy and constantly tore off her clothes and remained nude. Records indicate that except for a few almost momentary periods of communicativeness several years ago she has remained in a similar condition until 1938, when insulin therapy was started. The diagnosis made after prolonged consideration was catatonic dementia praecox.

The writer saw her first early in 1936. She was still secluded in a private room; ate fairly well as a rule, but was untidy and combative. She lay in bed nude, with a sheet completely covering her most of the time, but if disturbed in any way, or even spontaneously at times, would walk about her room nude, and talk constantly and loudly, in a deep, unnatural voice. The writer never heard her normal voice until insulin was started. Her talk was jumbled and formless, always obscene in the extreme. She was so combative that any care whatever required the presence of several attendants. Once during 1936 sodium amytal was given intravenously, but no effect other than a sedative one was obtained.

Late in January 1938 she was assigned a private room and a special nurse on the women's receiving ward. She apparently liked her nurse, and was behaving a little better before insulin was begun. It became possible to keep her dressed a part of the time, by keeping her out of her room. She still had

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many days, however, when she would become extremely noisy and obscene, and would go into her room, tear all her clothing off and go to bed. Her talk was usually monosyllabic and her attitude morose and sullen. Though there was a little improvement attributable to the change of environment, it was slight and inconsistent, until the time insulin therapy was started.

Insulin treatment was begun February 14, 1938, approximately nine years after the onset of the psychosis. She received 38 treatments, and completed the course April 8. She showed a typical coma only twelve times, and had eleven epileptiform convulsions. During the treatment, several interesting observations were made. The dosage was started at twenty units, and the first coma occurred on the tenth day of treatment, with ninety units of insulin. Up to and including this day she showed no improvement. The next day a peculiar phenomenon occurred, one which we have not seen reported elsewhere. At 6:45 a. m., a few minutes less than 24 hours after the injection, she had a genuine epileptiform seizure, lasting five minutes. The previous day she had eaten considerable fruit, and had eaten a definitely adequate amount at the evening meal; but as will be seen later, a mild hypoglycemia had probably occurred nevertheless. As she recovered quickly and took a large breakfast, she was kept in bed but given no other treatment. She refused her lunch, and almost at once was noted to become weak and drowsy, indicating in all probability a recurring hypoglycemia, 29 hours after the insulin injection. Before any treatment could be given, she had another convulsion lasting three minutes, with marked cyanosis. Forty cubic centimeters of 33 per cent. glucose was given intravenously at once. At 1:35 P. M. there was another very severe attack, beginning in the legs and spreading to the entire body; and at 1:40 P. M. another occurred. Adrenalin had already been given, and she now received forty cubic centimeters of glucose again. As the three seizures had been severe, it was decided to proceed at once with the treatment previously worked out for such cases, and she was therefore given five grains of sodium luminal intravenously; no further epileptiform seizures were seen. After recovery from this complication she showed the first signs of mental improvement. She dressed herself, read the paper, and was quiet and cooperative. She began to ask questions about how she came to be in a hospital, and seemed depressed, and still rather unstable.

Treatment was resumed March 2, with reduced dosage, and on March 8 she had one convulsion and on March 9 had two. Both days the attacks occurred in a pre-comatose state and ceased promptly after glucose. She was quiet and cooperative both days after waking. The next few days she spoke more about her past life and about her husband. It was realized from her questions that she had a complete amnesia for the period of her hospitalization; she insisted it was 1932 and believed she was still in the hospital in Philadelphia. The magnitude of the psychiatric problem of rehabilitation thus became apparent. On March 14 and 16, two more convulsions occurred; she continued somewhat improved, though she persistently doubted explanations given her in an effort to aid her orientation. She argued at length over why her letters from relatives should have three cents postage, as she was certain that only two cents was required for a letter. On March 17 she had three convulsions during hypoglycemia, not controlled by glucose; after the third one five grains of phenobarbital sodium was again given intravenously and the seizures ended. Tube feeding was also done, and she awoke in a pleasant mood in the afternoon. It was noted that a focal or Jacksonian epilepsy of the left leg was present; a little phenobarbital was given by mouth, the epilepsy showed no tendency to spread, and faded out in eighteen hours. Her attitude toward this complication was one of amusement.

Treatment was resumed but March 22 she went into a typical coma. That afternoon she became noisy, tore up her clothing, and went to bed nude, though she had seemed to show improvement until the time this coma was produced, and no psychological cause for her regression was ascertained. The next day, when in an appropriate pre-comatose state, she was deliberately stimulated and another convulsion produced; in the afternoon she was again quiet, ate her meals and remained dressed. The following day sudden tempo-

rary weakness in the left leg was noted occasionally, but soon disappeared. She then had three comas, with little mental change. March 28 and 30 she again had convulsions, and both days was a little more active and accessible in the afternoon than usual. She then had six further comas and showed steadily less myoclonic irritability; it was never possible to produce a convulsion again. The mental condition also became gradually a little less favorable, and at the end of treatment, April 8, she had never regained the same degree of improvement which she had shown about March 10, when she was having convulsions almost daily.

Comparison of the mental state before and after the course of treatment did, however, show considerable improvement. Though still grossly psychotic and unstable, she was keeping her clothing on, was quiet enough to be taken outside for recreation daily, was showing an entirely new interest in her appearance, and was often, though not uniformly, accessible in conversation. She was still puzzled over her loss of six years, and was concerned and sometimes irritable about previous belongings which she missed. A strong degree of independence combined with some suspiciousness made the task of explanation more difficult.

After the conclusion of the treatment, she was transferred to a more attractive ward, and continued to have a private nurse and close psychiatric supervision. In the opinion of the physician and nurses caring for her since then, she has shown very little further change. She only occasionally grows rather excitable and noisy, and has been obscene only once. She varies considerably in mood, being pleasant at times, and at other times very sarcastic and disagreeable. Two or three times she has remained in bed, but has not removed her clothing. She believes that she must work to pay her way and performs many tasks willingly. She takes some pride in a task and resents having anyone take over any of her work. Ideas of unworthiness are expressed; she constantly states that she should care for others instead of being cared for. When interviewed recently, she expressed some resentment over the insulin treatment, but talked in a quiet way and without excitement or marked irritability. She was still unable to accept the facts of her orientation; she did not believe she was in Delaware, and insisted that regardless of the year she had been married only two years. She does, however, remember isolated fragments of her ward existence before the insulin treatment. Once, when her wedding ring was given to her, she expressed the idea that the nurse had been wearing it "all these years." She is roughly correct about the time since insulin treatment was stopped. No answers denoting insight could be obtained; she insisted the physician should know more about her condition than she did; and she was defensive about being in the hospital, remarked repeatedly that the state hospital was where they kept crazy people. Her emotional attitude was well controlled at this interview, though she showed some antagonism toward the physician because of her treatment.

An environmental change to which she has never been able to adjust herself concerns the change in her husband's residence and economic status. When the phychosis began he was employed at a very modest salary, and in the intervening years he has moved to a Midwestern state and receives a much larger salary. Her inability to accept this as fact makes her refuse to accept also the statement that he pays for her care, and she insists therefore that she has become a charity patient. When the husband visited her recently she recognized him, but expressed uncertainty about the many things he told her. The change into an entirely new environment by the husband represents a still further difficulty to which the patient would have to adjust herself.

COMMENT

The interesting features in this case fall into two groups: first, the unusual reactions connected with the treatment itself; and second, the final outcome of the case and the factors which may be brought to bear in determining it.

One of the outstanding complications occurring early in treatment was the epileptiform seizure occurring almost 24 hours after insulin injection, and the evident hypoglycemia and ensuing seizures occurring after 29 hours. The time interval was greater in this

case than any we have seen reported. The seizures themselves are probably due to a slight hypoglycemia continued over a long period; this was evidenced here by the drowsiness and weakness preceding some of these. Sakel (1) holds this view, stating, "Accumulated epileptic seizures occur apparently only after a protracted sugar hunger of the tissues." The use of barbiturates to halt the progress of repeated seizures followed its successful use in another case previously reported by the writer (2) and arrived at by many other workers.

The question of whether repeated seizures cause brain damage of importance is beyond the scope of this paper. Weil, Liebert, and Heilbrunn (3) found that in rabbits only doses of insulin far larger per kilogram than those used in this treatment caused any damage. Various autopsy reports are becoming available; these, however, though indicating a possibility of connection between seizures and brain damage, are not conclusive.

The therapeutic effect of seizures in the treatment seems to be a variable phenomenon. Sakel (4) now states that he has noted the value of convulsions in some cases from the first. Isabel Wilson (5) mentions two cases, one of which she observed personally, in which sudden lucidity appeared after a convulsion. Von Braunmuhl (6) states that " . . . in the majority of cases, they have shown impressive therapeutic effect." In our own case there was from day to day a striking concomitance between the mental state and the occurrence of seizures. From the time when the patient became more recalcitrant in this respect and showed no further tendency to epileptic phenomena, all mental improvement ceased. Von Braunmuhl, in the discussion cited above, notes this tendency of some patients to show less and less epileptic phenomena as treatment progresses. Because of the definite relationship between seizures and improvement in this case, the use of metrazol is an interesting possibility for the future, if conditions warrant. The divergence of opinions concerning the seizures is interesting. Holmes (7) for instance, was unable to see any beneficial effects in fifteen cases observed.

Another question at present unanswerable is presented by the patients who, like the present one, show a definite but unsatisfactory state of improvement at one stage of the therapy, and who definitely grow worse with further treatment. Unfortunately, though such cases are fairly common, the criteria for determining the optimal time to suspend treatment are little understood.

The consideration of the ultimate outcome of this case is also an interesting one. Three possible courses may be taken by the patient: she may improve to the point of making parole possible; she may make a ward adjustment at a much more satisfactory level than before; or she may relapse to approximately her former state. Adjustment outside the hospital will be peculiarly difficult in this case because of the amnesia for a period of six years, and even more so because of the husband's having moved, physically and financially, into a quite different environment in the intervening time. The process of filling in her memory of the missing years is a difficult one, and attended by many possibilities for disaster. Undoubtedly the long duration of her psychotic retreat from her difficulties will predispose her, almost as a long continued habit, to relapse again into the same state. Apparently the two most definitely indicated psychotherapeutic lines of endeavor are first, the gaining of rapport and attempting gradually to lead her to accepting her correct orientation, with whatever insight it may entail; and the use of her psychic assets—for example, her desire to work and her pride in her work—to make at least a compromise solution and a ward adjustment possible, if more ambitious plans are not successful. Even if the net gain is only the transformation of an unruly, violent and chronically antisocial patient into a relatively comfortable, quiet and more or less productive individual, our therapeutic efforts will have been of considerable value.

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SILENT EPIDURAL TUBERCULOUS ABSCESS

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This case is reported because of the rarity of the pathological process and its failure to cause symptoms during life.

Case: E. B., white, female of 65 years, was admitted to Delaware State Hospital, January 8, 1920. There was a history of mental defficiency dating from infancy. She was cared for by members of the family until her admission to the Hospital at the age of 47 years. Her stay at the hospital was comparatively uneventful. She was always poorly nourished despite a healthy appetite. In 1928 an x-ray of the skull showed normal structure. In 1932 her lungs were shown negative by x-ray. In December, 1936 she sustained an impacted fracture of the neck of the right femur. The position was good, and subsequently she moved about the ward by pushing a chair in front of her. Her urinalysis showed various amounts of albumin present in nine of thirteen examinations. Until her terminal illness her blood count was normal. Her blood pressure showed varying degrees of elevation throughout the years, and a reading of 232/134 was recently recorded. The blood Wassermann and Kahn were negative. In June, 1936 there occurred a convulsive episode followed by rigidity of the right upper extremity, which was diagnosed as cerebral softening. Death occurred April 19, 1938, after a short illness.

Autopsy showed extensive pneumonia involving the greater portion of the right lung and about one-third of the left lung. Dense fibrous pleural adhesions were present at the right base and diaphragmatic surface. The heart was not enlarged. The entire abdominal cavity was obliterated by dense, fibrous adhesions. Adhesions also involved the entire liver surface. A small gall bladder contained a solitary stone. The kidneys were of normal size, but somewhat pale and scarred, and microscopically presented the picture of early primary contraction. The appendix was not identified.

The skull, which presented normal external appearance, showed in the right parietal-temporal region an epidural abscess measuring 7 x 7.5 cm. in area and 1.5 cm. at the point of greatest thickness. The borders sloped to a thin edge. This epidural abscess was filled with exudate which varied from thick yellow fluid to fibrous in character. The fibrous portions were moderately adherent to both dura and bone, but the cerebral aspect of the dura showed normal glistening structure. The right cerebral hemisphere showed a depression corresponding to the position of the abscess. Aside from the associated vascular congestion and two small porencephalic areas in the left caudate nucleus and putamen the brain structure was not remarkable. The brain weighed 1180 grams.

Microscopic examination of the epidural abscess showed central caseation, with very numerous typical tubercles present along the periphery. On the osseous aspect the process caused moderate bone erosion of the inner table. In none of the organs was evidence of tuberculosis present. However, pneumonic consolidation was too extensive to permit identification of old tubercular foci by palpation of the gross specimen. There was nothing about the peritoneal, perihepatic, or pleural adhesions suggestive of a tubercular process. There was no evidence of syphilis. The absence of symptoms in the presence of this lesion is best explained by its slow development, which permitted the brain to adapt itself to pressure changes.

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THE PRACTICE OF DENTISTRY IN A MENTAL HOSPITAL

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AND
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In a mental hospital the general practice of dentistry is fundamentally the same as it is in any other hospital or private practice; but the actual handling and care of the patient is somewhat altered. The normal, intelligent person can take care of his teeth. He has a regular daily mouth hygiene, and he visits his dentist at least twice a year. The mentally ill person is in most cases unaware of any abnormal condition of his mouth or teeth,

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and because of this he needs more attention than the normal person.

To illustrate how the dental department in the mental hospital carries on its work, let us take the case of Mr. John Doe. During the first day of Mr. Doe's confinement in the hospital, he was examined by the dentist and a record was made of any dental work which needed attention. This record shows the conditions existing within the mouth, such as, missing teeth, teeth which have been previously filled, and those which need to be filled or extracted; the condition of the gums and surrounding tissues, also the readings of the radiograms of the teeth and the bony structures of the mouth.

Mr. Doe's record was something like this: four remaining infected teeth in the maxilla; six remaining teeth in the mandible, the bicuspids and molars were apparently missing; but from the reading of the radiograms the two lower third molars were impacted. In the six remaining lower teeth, two have been previously filled, and three need to be filled. The gums presented the appearance of Vincent's infection, which was confirmed by the laboratory report of the smear of the gingiva crevice.

In all cases where Vincent's infection is found in the mouths of the patients, the patients are immediately placed on isolation, and treated until the infection subsides.

Shortly after Mr. Doe's examination he was called to the Dental Surgery. Here his teeth were cleaned and filled, and his gums were treated. After his gums were in a healthy state, the four upper infected teeth were extracted under local anaesthesia, and the two lower impacted third molars were removed under general anaesthesia. These infected and impacted teeth were not extracted because of the theory of Dr. Cotton, "that infected teeth are the cause of insanity;" and they were removed so that the patient would be in a better physical condition to help overcome his mental illness.

After Mr. Doe's mental condition improved, procedures were taken to restore his missing teeth. His mouth and gums were sufficiently healed by this time so that impressions could be taken from his upper and lower gums. Later, his mouth was placed in full masticatory facilities with a full upper and a partial lower denture.

During the confinement of the patients in the hospital, the nurse of their ward, under the supervision of the dental hygienist, attends to the cleaning of their mouths and teeth after each meal. A monthly examination is made of each patient with artificial dentures for adjustment and the possibility of need for repair. The natural teeth of the patients are examined and cleaned at least four times a year. Any restorative work needed is done wherever found.

By frequent examination, cleaning, and restorative work the mouth and teeth of the patient are kept in as nearly normal condition as circumstances permit.

Basal Anesthesia

Encouraged by Gwathmey's results, Alfred E. Jones, Chicago (*Journal A. M. A.*, April 30, 1938), states that rectal evipal anesthesia was given a thorough trial at the Michael Reese Hospital. As a result, he reports 518 cases in which, during the last twelve months, evipal soluble was used rectally, principally as a preliminary anesthetic to provide basal anesthesia before administration of ether, ethylene or local anesthesia. These 518 cases fall roughly into four groups: (1) kidney, ureter and bladder conditions, 203; (2) general surgical, orthopedic and gynecologic, 176; (3) in children, for excretion urography, removal of stitches, drains and the like, 136, and (4) renal and ureteral colic, three cases. The results have been most gratifying. In practically every case the patient fell into a quetiet, restful sleep within five to ten minutes from the time the injection was given. There was complete relaxation, with deep rhythmic breathing and good cardiac action. The blood pressure dropped slightly in most cases, but not more than a few millimeters. As a terminal or supplementary anesthetic ether or thylene was used in the majority of cases. The circulatory and respiratory changes following rectal administration of evipal soluble were practically nil compared with those following other preanesthetic drugs. In eleven cases (2.1 per cent) there has been marked confusion or delirium on waking. Most of these occurred early in the series, and they can properly be attributed to an idiosyncrasy to barbiturates which some patients manifest.

EDITORIAL

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PSYCHIATRIC RESEARCH

During the last five to ten years, psychiatry has seen some revolutionary changes. Insulin and metrazol treatment for dementia praecox, lobotomies for depressed cases, particularly of the agitated type, inductotherm for various organic conditions, endocrine therapy for all conditions considered functional, due probably to the equally rapid strides which are occurring in endocrinology. The physical treatment for mental diseases is now uppermost and according to reports are to a certain extent successful. As with all new treatments reports are variable. Abnormalities in endocrine secretion show changes in blood chemistry. Research is needed to determine what is happening to the physiology of the mentally disturbed patient. It is hoped that detailed chemical analysis of the blood will eventually rationalize treatment and that the pathological recognition of mental diseases will be as readily understood as those of other diseases with which we are familiar. The State Hospitals are the logical places for such research, since it is in these institutions that sufficient material is available for adequate study. It is essential that the laboratories of these institutions be equipped to carry on the most detailed physiological chemical work. Psychiatry at present is seeing a further ray of hope. The treatments used may seem drastic in many cases, but remissions are occurring. There is a certain amount of danger, but the same is true of a surgical operation. At times the psychiatrist may feel that he is working blindly, but he must be fearless and optimistic. From being a stepchild of medicine, he has now found himself forced to be familiar with the essentials of most specialties, as well as with body chemistry. He is fortunate if he has at his command a well equipped laboratory, for he can then help to clear much of the mystery surrounding psychiatry. He has before him a vast country to be explored.

Psychoanalysis was the last upheaval in psychiatry, but it was only for the maladjusted—not the true psychotic, the most pitiable of all people. There has been some success in the physiological approach. We must be optimistic at the present, but the psychiatrist must keep on a level track studying his results from a psychiatric, psychological, physical and chemical viewpoint.

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SCHOOL TEST PATTERNS OF CLINIC CHILDREN

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Psychological studies of children are rarely complete without school tests. These determine the extent to which a child has mastered the subjects taught in school. School tests are also known as achievement tests. The most commonly used achievement tests are those concerned with measuring progress in the tool subjects—reading, spelling, and arithmetic. During the first few years of their schooling children learn several new techniques of ideational exchange. These primary tools constitute the basis for advanced studies of the upper grades and for effective vocational and social intercommunication in adult life. The sooner the foundations for further cultural and intellectual growth are laid, the more helpful they are in later life.

Despite the activity programs now prevalent in progressive schools, the three R's remain the central theme of the primary grades. In recent years a distinct tendency to stress the essentials has become manifest, for it is obvious that most meaningful and socially profitable activities presuppose a good mastery of the three R's. If a child does not learn to read during the first four years of school, he is likely to go through life without fully mastering a subject through which most of our general knowledge is acquired.

Intelligence tests form the major part of any psychological study. If it were possible to make accurate predictions concerning school progress from the I. Q., school achievement tests would be superfluous. None of the three R's correlate highly with intelligence. It is therefore imperative that an intelligence examination be supplemented by achievement tests. A series of school achievement scores may yield valuable information concerning the child's total personality, since all essential qualities of behavior are simultaneously reflected in all undertakings, accomplishments, and interests.

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In problem children the development of primary school functions is rarely uniform. The type and degree of the test variability reveals not only how much a child has learned in the various subjects, but may furnish valuable clues as to the type of mentality represented by the child. It may even determine the treatment to be undertaken. A sixth grade child with third grade achievement in reading and sixth grade achievement in arithmetic is liable to present totally different problems than a sixth grade child with sixth grade achievement in reading and third grade achievement in arithmetic.

School tests may also yield information about the effectiveness of teaching methods and about the presence and absence of proper home training.

The results of our study will be presented in patterns. A test pattern is the relationship of two or more test scores derived from the same child. It discloses the following facts:

1. the child's standing in the school subjects in comparison with other children,
2. the relationship of one subject to the other in the same child,
3. the degree of retardation or acceleration with respect to grade placement,
4. the extent to which a child works up to the level of his mental capacity.

Two illustrations from clinic records will make clear the meaning and value of achievement patterns.

J. F. is a 15 year old white boy with a long juvenile court record. Truancy and stealing are recurrent offenses. He has low average intelligence. He has reached the 7th grade in school. His actual achievement is as follows:

arithmetic—end of 4th grade
reading —middle of 2nd grade
spelling —middle of 1st grade

N. K. is in the 8th grade at the age of 13. The clinic is to determine whether she has sufficient ability to cope with the academic curriculum of senior high school. She is found to be of distinctly superior intelligence, but her school achievement is:

arithmetic—middle of 5th grade
spelling —middle of 8th grade
reading —beginning of 10th grade

Three test scores may arrange themselves into six different patterns. In the list of six patterns below the first one represents the most successful subject, the second is intermediate, and the last is the least successful.

Arithmetic—Reading—Spelling	(ARS)
Arithmetic—Spelling—Reading	(ASR)
Reading—Spelling—Arithmetic	(RSA)
Spelling—Reading—Arithmetic	(SRA)
Reading—Arithmetic—Spelling	(RAS)
Spelling—Arithmetic—Reading	(SAR)

As reading and spelling are psychologically related functions they may be combined for purposes of reducing the six patterns to three: arithmetic higher than either reading and spelling, arithmetic lower than either reading and spelling, arithmetic in an intermediate position.

The subjects of our study are 348 children of school age examined at the Delaware Mental Hygiene Clinic between May 1st and December 31st, 1937. All these children were given a comprehensive battery of intelligence tests and most of them were also given achievement tests. Their ages range from 6½ to 17½. There are 251 boys and 97 girls in the group. They were referred to the clinic by the following agencies:

Juvenile court	49 per cent
Public Schools	20 " "
Social agencies	18 " "
Industrial schools ...	8 " "
Physicians	5 " "

Of the whole group of 348 children, 224 were given all three achievement tests. The remainder (124) were examined only in reading and arithmetic. This latter group yields only two patterns: arithmetic higher than reading (AR), and arithmetic lower than reading (RA). What is the incidence of the various patterns among our clinic children? Which school subject is the most successful?

The test patterns of the 224 children who were tested in reading, spelling, and arithmetic are as follows:

ARS and ASR	147 cases	65.6%
RSA and SRA	32 cases	14.3%
RAS and SAR	39 cases	17.4%

Forty-nine per cent of the whole group had the ARS pattern. Among the 124 children who were tested only in reading and arithmetic 73 per cent received higher ratings in arithmetic than in reading and only 22 per cent received higher scores in reading than in arithmetic.

The majority of clinic children are distinctly number-minded. The test patterns do not disclose the degree of discrepancies between the test results. One way of determining the extent of the differences is to calculate a pattern quotient. An arithmetic-reading pattern quotient is obtained by dividing the reading grade by the arithmetic grade. (X 100) A quotient below 100 means that reading is lower than arithmetic and a quotient above 100 means that arithmetic is lower than reading. Table I shows the distribution of pattern quotients in our group.

Table I. Reading-Arithmetic Pattern Quotients of 348 Clinic Children

Reading Grade / Arithmetic Grade	No.	Per Cent
30 to 69.....	128.....	37
70 to 89.....	86.....	25
90 to 109.....	74.....	21
110 to 129.....	36.....	10
130 and above	24.....	7

It follows from the data listed in Table I that 37 per cent of all children are seriously retarded in reading in comparison with their standing in arithmetic. Twenty-five per cent may be said to be moderately retarded in reading; twenty-one per cent are practically even in both subjects; ten per cent are moderately retarded in arithmetic and seven per cent show a serious number handicap. The spelling-arithmetic quotients would, in most instances, be even lower than the reading-arithmetic quotients.

Significant sex differences are found to occur in the distribution of achievement pat-

terns. It seems that girls are responsible for most unusual and irregular patterns. Table II shows that girls are more successful in spelling than are boys, and that they are less successful in arithmetic than are boys.

Table II. Position of Spelling and Arithmetic Achievement of Girls in the Pattern Groups

Pattern Groups	Per Cent
Spelling highest	44
Spelling intermediate	37
Spelling lowest	21
Arithmetic highest	22
Arithmetic intermediate	36
Arithmetic lowest	44

The reading-arithmetic quotient is a convenient index for showing up the enormity of the problem of reading disabilities in clinical diagnosis. But it does not always reveal the full truth. Children with reading disabilities may also be seriously retarded in arithmetic. In such cases, the quotient may be high and reading disability may still be present. Success in arithmetic is to some extent influenced by reading disability. Many children of the primary grades fail to progress normally in both subjects because of the common interference factor. Some schools do not promote their children until their achievement in reading is commensurate with grade placement. This in itself prevents many children from advancing in arithmetic as fast as they are capable of. A 12 year old child, of average intelligence, may be in the 4th grade because of reading disability. His achievement in arithmetic may not be higher than 4th grade, although potentially he is able to do 7th grade work.

The extent to which children work up to the level of their capacities is measured by the accomplishment quotient. This is obtained by dividing the reading or arithmetic age by the child's mental age. Since three or more mental age ratings were derived for our children, the highest value was used as approximating the child's true capacity. The method of the highest mental age correlates best with life's criteria. Assuming that an accomplishment quotient of 85 and above indicates adequate use of one's abilities, we find that 53 per cent of our children reach that level in arithmetic and only 32 per cent in reading.

Table III. Average Accomplishment Quotients In Reading and Arithmetic According to Intelligence Groups.

Intelligence Classification	Number	Accomplishment Quotients in Reading	Arithmetic
Moron	33	86.6	96.4
Borderline	57	83.6	93
Dull Normal	79	83	88.8
Average	128	77	83.4
Bright	43	73.8	74
Superior	8	66	70

Three facts stand out as we inspect the data of Table III.

(1) The average reading quotient of each group is lower than its corresponding arithmetic quotient. This is another way of saying that most clinic children are less successful in reading than in arithmetic. (2) The more intelligent the child is, the greater the discrepancy between actual achievement and latent ability. The moron cannot catch up with others; the average and superior child cannot catch up with himself. (3) The discrepancy between reading and arithmetic is statistically smaller in the more intelligent child. The reason for this may be the fact that the intelligent child continues his school training for a longer period and therefore is more likely to overcome the reading disability.

Arithmetic, as a school subject, has a decided advantage over the language functions in the first grade. Its scholastic and social importance gradually decreases as we grow older. The average adult rarely uses higher than fourth grade number operations in daily life. But his reading interests are liable to raise his performance in that function to the 7th grade level. As the non-reader grows older, the differences between school subjects are obscured by these changes in emphasis and social need. Older children show many more mixed patterns than do young children. This is partly shown in Table IV.

Table IV. School Test Patterns and Children's Ages

Age	ARS and ASR	RSA and SRA	RAS and SAR	AR	RA
7 to 9	13.6%	6.3%	2.6%	23.1%	0 %
10 to 11	25.2	28.1	12.8	23.1	14.8
12 to 13	21.7	21.9	28.2	25.2	18.5
14 to 15	27.9	28.1	30.8	19.8	40.7
16 to 17	11.6	15.6	25.6	8.8	26

Between the ages of 17 and 21, adolescents with reading disabilities begin to show an increased interest in reading. When this happens, additional "intellectual growth" results and the verbal abilities improve significantly.

The non-reader is not only a left-minded, but above all a manual-minded person. He thinks in terms of object situations. The majority of children of the ARS and ASR group have high performance quotients. Their verbal functions, as measured by the Stanford Binet or by the Vocabulary Test are mediocre or defective. Their psychometric pattern is: Performance-Stanford-Vocabulary.

This pattern is diametrically opposed to the one found in most patients suffering from psychoses, neuroses, and psychopathic personalities. The psychotic, as a group, are very inferior in arithmetical calculations; the majority of our clinic cases excel in arithmetic. Arithmetic and performance tests measure attentional control, effectiveness of concentration, practical adaptability, relevance of judgments, orderliness of thought processes, and contact with reality. Most of the children studied are adequate in precisely these traits. This does not mean, however, that their social adjustments are normal. It may mean that the cause for their maladjustment must be looked for in the environment. Their symptoms must be interpreted as normal responses to an abnormal environment at home, in school, or at work.

About ten per cent of our children are feebleminded. Seventy per cent are potentially normal, but socially maladjusted. Only about twenty per cent belong to the group of inherently unwholesome personalities. Children of the latter group may be expected to respond abnormally even to a normal environment. They do so in the psychological tests.

CHILDREN WHO DRAW

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A pencil or crayon is used by children at an early age. Year old babies will scribble, two year olds will make circular marks in imitation, three year olds will copy a circle. As early as three years the normal child will make spontaneous drawings. These are not always recognizable for what they represent, but the child has definite ideas which he is attempting to express. It is thus apparent that drawing is a non-verbal communication of ideas, a substitute for written or spoken words. Language development in civilization has progressed from primitive drawings left in caves, through symbolic representations of visual entities, to symbolic representation of vocal equivalents or letters. The progress of the child's expression of ideas is somewhat similar. Young children make frequent spontaneous drawings. Many older children have a decided tendency to draw what they see or observe. Not all children, however, do well in drawing. What, then, are the factors which motivate one child to express himself mainly through non-verbal media, whereas another child may only rarely express himself in this manner? One of the dominant factors appears to be a lack of ability in verbal expression, and the study presented here is an endeavor to clarify the various peculiarities of mental make-up which tend to lead the child toward non-verbal presentation of ideas.

That spontaneous drawings of children may furnish much material for study by the psychologist is not a novel idea. Goodenough (2) in her historical survey, mentions that studies of children's drawings were made as early as 1885. Goodenough herself has contributed in great measure to the psychologist's knowledge of children's drawing ability by the standardization of the "man-drawing test." In this test the child is told to make as good a drawing of a man as he can, and the result is scored on the basis of fifty-one units of measurement or details which have been found to correlate with mental growth. The number of units includ-

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ed in a drawing constitute the score for which a mental age equivalent has been worked out. Thus, the drawing of a young child which has perhaps only the head, legs, and body present would achieve three points credit and a mental age rating of three years and nine months.

In the present study the Goodenough drawing test has been used as one test in a battery of not fewer than four. Previous studies (1), (5), (6) have shown the existence of various types of psychometric patterns based upon the relationship between the quotients obtained on the Terman Vocabulary Test, the Stanford-Binet Test, and a Performance Test. The patterns thus obtained may be grouped into six categories, the verbal pattern, and the psychomotor pattern (8), and four types of mixed patterns, which will henceforth be designated as Mixed I (Stanford highest, vocabulary next, and performance lowest); Mixed II (Stanford, performance, vocabulary); Mixed III (vocabulary, performance, Stanford) and Mixed IV (performance, vocabulary, Stanford). The Goodenough drawing of a man test has been used in conjunction with the other tests in an attempt to discover what its clinical use may be with reference to its relationship to the psychometric patterns already known.

The ratings have been divided into groups in accordance with the patterns previously mentioned without reference to the Goodenough test score. The largest group (35% of the cases) belongs in the psychomotor category. Most of these children have been diagnosed as suffering from reading disabilities at present or as having partially overcome reading disabilities. The table below indicates the average quotient for each of the tests according to pattern groups, as well as the number of cases in each group and the average chronological age.

No. of Cases		Average C. A.	Vocabulary Quotient	Stanford Quotient	Performance Quotient	Goodenough Quotient
25	Psychomotor	10-2	74	78	92	89
10	Verbalists	9-2	75	69	60	64
12	Mixed I	7-9	83	90	78	92
10	Mixed II	9-11	66	70	76	81
7	Mixed III	9-7	93	76	81	79
7	Mixed IV	11-2	81	68	93	79

An analysis of the table shows that the Goodenough is higher than the verbal tests in the psychomotor, Mixed I, and Mixed II groups; lower than the verbal ratings in the verbalist, Mixed III and Mixed IV groups. It is also apparent that the Goodenough drawing test rating approximates most adequately the highest rating in the psychomotor, the Mixed I and Mixed II groups; the lowest rating in the verbalist group and the middle rating in Mixed III and Mixed IV groups.

All the facts above cause some perplexity as to what factors are influential in causing the Goodenough ratings to shift position as they do in accordance with different patterns and mental make-up. In other words, what does the Goodenough test measure? What sort of intelligence and personality factors come into play in the execution of drawing a man? The following table indicates some of the factors of which affect the test ratings on each test:

VOCABULARY	STANFORD	PERFORMANCE	GOODENOUGH
1) Verbal expression	1) Verbal expression		
2) Conceptual level	2) Conceptual level		
	3) Visual memory control	1) Visual memory control	1) Visual memory control
	4) Auditory memory control		
	5) Speed of response	2) Speed of response	
	6) Abstract reasoning		
	7) Ingenuity or planning	3) Ingenuity or planning	2) Ingenuity or planning
3) Verbal comprehension	8) Verbal comprehension	4) Practical reasoning	3) Verbal comprehension
	9) Concrete Comprehension	5) Concrete comprehension	
		6) Lateral orientation	
		7) Observation of detail	4) Observation of detail
		8) Motor coordination	5) Motor coordination

It is apparent that the Goodenough drawing test is influenced by three factors which influence the Binet test, one factor which influences the vocabulary test, and four factors which affect the performance ratings. One would expect then that the Goodenough would approach more nearly level of the performance or of the Stanford than that of the vocabulary test, and the table of averages shows this to be the case.

The pecularity of the patterns and the position of the Goodenough tests, then, depend on each child's rating on the abilities included in the tests. The results of the psychomotor and verbalists groups illustrate this in a definite manner.

The psychomotor group as a whole is comprised of "children who can not read." By this is meant that their verbal and linguistic achievement is definitely inferior to their native level of endowment because of poor lateral orientation, poor verbal comprehension, and frequently poor auditory or visual memory control. These children usually have excellent practical judgment, observational powers, motor coordination and planning ability. The Goodenough drawing test thus gives them an opportunity to express those abilities in which they are adequate without requiring any powers in which they are inferior.

The verbalist group comprises children who read well for the most part, but are poor in motor coordination, planning, practical judgment, memory, complex reasoning, and observational powers. These children are, however, not handicapped by poor lateral orientation. Consequently, in verbal situations they produce adequate results; except for lateral orientation, performance sub-test items are poorly performed, and in the drawing test they have no opportunity to express their best capacities.

Most of us follow the line of least resistance and the children in the psychomotor group are no exceptions to the rule. During reading class they are entirely at a loss in competition with children who can read adequately. In order to keep busy they amuse themselves by drawing figures with a gun ready to shoot their teacher or the classmate who reads better than they do. They make excellent marks in drawing class and usually do comparatively well in arithmetic. A few remarks gleaned from the case records of several such children serve to illustrate this.

Anne, aged six years, was first referred to the clinic because of refusal to attend school. Her test quotients were as follows: Terman vocabulary test, 86; Stanford-Binet test, 100; Cornell-Coxe performance test, 105; and Goodenough drawing test, 111. In the social history her interests are described as follows: "Patient likes to play hopscotch and jump rope. She also spends a considerable amount of time drawing and painting in water colors."

Albert, aged seven years, obtained these quotients on psychometric tests: Terman vocabulary test, 78; Stanford-Binet test, 80; Arthur performance test, 103; and Goodenough drawing test, 100. The social worker lists his interests in this manner: "Albert likes to play soldiers, 'injuns' and cowboys. Loves to tear things up, but is not interested in putting them back together. Fond of drawing, looking at picture books, and listening to the radio."

Paul, aged twelve, has a vocabulary quotient of 71, a Stanford quotient of 82, a Cornell-Coxe performance quotient of 114, and a Goodenough drawing quotient of 83. A note on his school progress is as follows: "Patient was promoted in September. His marks for the term were A in effort and art, B in conduct, penmanship, music, hygiene and physical education, C in reading, spelling, language, civics and nature study."

Although the cases quoted above are all clinic patients, the findings are not peculiar to the clinic group. The following excerpt from a recent magazine article (7) describes a child who shows many of the symptoms of the non-reader but is notable mainly because his writing is upside-down and backward. "Frank has an average I. Q., is a B student, is rated 'excellent' in drawing, is two terms ahead of average pupils in spelling (although inversionists as a rule are bad spellers)."

Thus far only the two straightforward, easily diagnosed pattern groups have been

discussed. What about the mixed patterns, those where there are indications that the child suffers from both inadequacy of verbal expression and some loss of mental control and, who in consequence, never produces results in concrete or verbal situations which are entirely commensurate with mental capacity? If one reconsiders the table of averages, it is readily noted that Mixed patterns I and II (highest test Stanford-Binet) is composed of children who make comparatively high scores on the Goodenough drawing test. Further than that it is to be noted that the averages of the Mixed II group are not in accordance with the pattern they represent, even though each member of the group shows that pattern individually. Actually the averages follow the pattern of the psychomotor group. These peculiar results are readily accounted for by the fact that although psychometric patterns are mixed, the patterns in those cases where achievement test ratings have been obtained show the majority of cases to be marked reading disabilities.

In Mixed patterns III and IV (Stanford rating lowest) it is noted that the Goodenough drawing test averages are comparatively low with reference to the other test ratings. These children apparently suffer more from poor mental control and disorganized thinking than from linguistic handicaps, and it is interesting in this connection to note that two cases are personality problems of long duration, and one has recently been admitted to the Delaware State Hospital.

There are, of course, exceptions in each group, whether the psychometric pattern is of psychomotor type, verbalist type or mixed. There is one outstanding fact, however. In every case where reading ability is poor, drawing ratings are higher than verbal ratings, whether the child's psychometric pattern is of psychomotor, verbalist, or mixed type.

Throughout this study drawing has been considered a non-verbal expression of ideas and therefore largely dependent upon the child's native intelligence. There is no question that some of us have always looked upon drawing as a special ability rather than one depending upon development of general ability. This problem can not be settled without further investigation, since among the ranks of psychologists disagreement on this point is marked.

Hollingworth (4) states, "There have been various attempts to analyze into its elements the ability to draw. It is agreed the ability is complex, but it can not be so easily taken apart as can musical ability. Like general intelligenee, it is distributed among children in various degrees, most having a moderate or "normal amount." The superior degrees constitute talent. Modern life calls for all forms of talent in drawing in combination with various degrees in intelligence. . . .

"It is thought that talent in drawing probably manifests itself typically at an early age. However, until methods of measuring and identifying this talent shall have been developed, we can not discuss its manifestations in childhood, as would be desirable for the better education of children."

Goodenough (3) in contrast to this, propounds the following: "Up to the age of about ten years, the factor chiefly determining the quality of a child's drawing is his intellectual development. After the age of ten, the importance of the intellectual fact gradually lessens and drawing takes on the character of a specialized ability rather than a general means of expression."

How far then is the Goodenough drawing test useful as a clinical tool? Its great advantage, of course, is its simplicity, its short time requirement; the foregoing discussion also indicates its use in emergency as a substitute for a more complex performance scale, particularly in the case of preschool children who are unable to handle the blocks and materials of more advanced tests. Further, in combination with the vocabulary alone, the Goodenough drawing test may indicate whether the child suffers a language handicap or mental disorganization.

Whether or not a formal test of drawing ability is administered, drawings of school children should be of great value to the teacher, psychologist or psychiatrist, since

children who read but lack mental control do not, in most cases, draw, but children who can not read, draw.

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LATERALITY AS A CLINICAL PROBLEM

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During the past seventy-five years neurologists, physiologists, psychologists, and educators have shown increasing interest in the problem of sidedness of behavior, mainly because this factor is alleged to have a determining effect on individual and social adjustment. This claim seems acceptable at face value. In our decidedly right-sided civilization, those who habitually prefer their left side are exposed to many conflicts. Some investigators believe that strong laterality conflicts are responsible for the onset of a neurosis. S. T. Orton and his students make out a convincing case for the position that most children's difficulties in reading, writing, spelling and speech are attributable to a sidedness problem. Vocational teachers and counsellors frequently have adjustment problems with sinistrals. It is not necessary to elaborate further that laterality is truly an important factor in human development and adjustment.

In clinical psychology, problems of laterality crop up at practically every turn. A teacher would like to know whether John's inclination to use his left hand should be curbed. A principal asks why is it that most of his non-readers have left-handed preferences. A school boy reports that his mother tied his left hand to his side to prevent him from using it. A parent noted that her son never stuttered until he was forced to write with his right hand. An adult is reluctant to admit that he is left-handed because he is ashamed of it.

What should be the psychologists's point of view in attempting to cope with such problems as these? It seems that the answer ought to depend on our knowledge of the nature of laterality and on justified theoretical assumptions. Let us briefly review some crucial phases of laterality to gain an orientation of the field.

First, what is the nature of laterality distribution in a normal population? Opinions on the question are diverse. Some psychologists believe that laterality distribution is bimodal. That is to say, there is a small concentration of left-handed individuals at one end of the handedness scale and a large concentration of right-siders at the other end, with a small transitional group of ambidextrous in between. Some adhere to the popular conception of distribution which holds that all individuals have a defnite native preference. In this case, the majority are definitely right-handed while the minority are divided between a small group of definitely ambidextrous and a slightly larger group of definitely left-handed. Both views are essentially the same, except that the former admits degrees of sidedness. Both agree that approximately 80% of the general population is right-handed, 15% is left-handed and 5% is ambidextrous. Still others believe that 2 to 12% of the human race is left-handed; the rest are dextrous.

We subscribe to a thesis which posits that laterality is distributed according to the normal distribution curve when the incidence of extreme right-sidedness is plotted on one side of the X axis and the incidence of extreme left-sidedness on the other, with all possible variations in between. The ambidextrous (actually the mild right and left siders) are concentrated around the central tendency. In terms of percentages this means that 50% of the population is right-handed, and 50% is left-handed. This concept of laterality distribution may seem unusual, but there is a considerable amount of substantiating material to support it. The other theories mentioned evolve from evidence derived from old line testing tech-

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niques; ours eventuates from a new trend in laterality measurements. The others are concerned with laterality distribution as manifested in overt activity; ours deals with central or potential laterality distribution.

How is laterality measured, and what is meant by old and new line measuring techniques? Handedness has been and still is being ascertained by a large variety of isolated acts. Most studies of hand preferences have employed such unimanual devices as tapping, strength of grip, use of scissors, throwing and catching a ball, writing, picking up objects, spinning a top, and the like; and such bimanual tests as sweeping the floor, batting a ball, and holding a spade. These are illustrations of old line testing devices. It will be noted that some of these performances require speed, some require accuracy, some strength, and some a manner of grip. It therefore follows that all are tapping a kind of sidedness (peripheral) that is extremely susceptible to training and other environmental influences. Recent studies have shown that there is such a thing as central laterality which is often different from peripheral or manifest sidedness. Central or potential laterality is the result of a structural-organizational nerve patterning, while peripheral laterality is the end product of neuromuscular conditioning. Central laterality either facilitates or inhibits peripheral development and functioning. For example, a person may be born with a natural or central preference for his left side. Due to the strong social and physical forces of a right-sided civilization, he soon learns that he will be happier if he relinquishes his latent lateral propensities and develops his less dominant side. Thus, to all outward appearances, he becomes a right-sider. This adjustment, however, does not eradicate his central left dominance, for the keen observer notes persistent evidences of it in this individual's everyday activities.

C. Van Riper, of Iowa University, has devised two experimental instruments which aim to measure central laterality. Both are the same in principle; one determines whether a person is right or left-handed, while the other, a revision of the first, measures both preference and degree of preference. The device places the subject in a laterality conflict and than forces him to make an unconscious choice. He believes that he is following instructions, but actually he is allowing his dominant hand to lead his non-dominant one, since both are in simultaneous parallel motion. Many subjects who are convinced that they are dextrous because they do practically every important act with their right hand, make mild or marked left preference ratings on the apparatus. J. Jastak, of the Delaware State Hospital, adopted Van Riper's contrivance for clinical use in the form of a specialized type of writing board called the ambigraph. The ambigraph, together with two tests of visual dominance, and eight well selected criterion performances, such as throwing a ball, dealing cards and writing, constitute his laterality battery. All items are weighted and scored, and the total numerical rating has a corresponding percentile and laterality classification based on a distribution continuum. When groups are measured on these instruments, laterality is distributed according to a crude form of the normal distribution curve.

Is laterality innate or acquired? Present knowledge of laterality does not permit a definite answer to this question. It will be fruitful, however, to examine the main arguments on both sides of the question and then offer our own point of view.

Those who are of the opinion that handedness is acquired state their case somewhat like this: "Babies are naturally ambidextrous and training brings out the preference." Or like this: "The easy and frequent opportunities for the young to observe the hand movements of their parents indicate the handedness is imitated. Evidence for the social heritage view is found in the insistence with which parents change over children who begin by using their left hand. . . . It is probably a matter of chance, at first, which hand an infant begins to use most of his own accord. But there is relatively little opportunity, in the nature of the case, for him to continue using one hand as much as the other." We agree that the social environment is a powerful influence

in determining peripheral sidedness for a large number of individuals but certainly not for all. This theory cannot account for the phenomenon of a markedly left-handed child in the home of markedly right-handed parents and siblings. Besides, the use of a given side does not necessarily mean that that side is the dominant one.

Those who believe that laterality is inherited are divided on how the inheritance mechanism operates. Some maintain that it is inherited according to the Mendelian law; some say that it is just inherited; and some say it "runs in families." All base their belief on genetic studies of the occurrence of handedness in families, and on the relative proportions of left and right-handedness in the general population. All use the same evidence and all arrive at different conclusions.

We believe that the tendency to be right or left-handed is inherited, but not according to the Mendelian law. The activity we observe and term laterality is certainly not a unitary trait; it is the dynamic resultant of an organic pattern that has been structured during development. The nature of the various segments which compose the configuration is determined by the structure of the genes present in the zygote. Although identical segments always unite in normal development, the total pattern differs in each instance. The character of the structure and functional whole are determined, not upon the presence of certain parts, but upon the character and organization of these parts which are determined to a large degree by chance. Laterality is a differentiation from an organic whole. A neonate first reaches with his whole body, then with his hands and feet, then with his hands, and finally with a hand. The last step is determined by predisposing influences, which might be overruled by environmental forces if they are not sufficiently potent.

This type of heredity explanation does not imply a contradiction to the brain dominance theory held by Dearborn, Downey, Wile, Orton, Travis and others. It confirms it. It maintains that approximately half the population is born with a right dominant brain hemisphere. The degree of dominance in each group is distributed over a wide range. For practical purposes, the middle group consisting of the mild right dominance and the mild left dominance are considered ambidextrous. It can be seen that this position is intimately linked with our point of view on distribution.

Our position then, may be briefly summarized as follows: laterality is distributed in the general population according to a continuum which takes the form of a normal distribution curve. It is also a dichotomy, for half the population has varying degrees of right-sidedness and half has varying degrees of left-sidedness. In the terms of percentages we approximate 16% of the population to be markedly right-handed, 34% to be mild right-handed, 34% to be mildly left-handed and 16% to be markedly left-handed. The structure responsible for the type and degree of laterality is inherited according to chance rather than the Mendelian law. These tenets agree well with the brain dominance theory, and even assume it.

Our orientation leads us to a healthy point of view in regard to the whole problem of laterality. Sinistrality is not a mark of inferiority; it is not a stigmata of degeneracy; it is not a structural deformity. Left-handedness is as natural a phenomenon as right-handedness. Manifest sinistrals appear unusual because they are in the minority and they stand out by their "peculiar" ways of adjusting to everyday situations. They may look freakish but they are not freaks, for we understand a freak to be an irregular or abnormal product of some process of nature. It leads us to think of sinistrals as unfortunate individuals who have the double burden of adjusting to regular life developments and to special situations created by the conflict between their propensities and the dictates of a right-handed civilization. We become sympathetic, and hence we attempt to understand rather than condemn sinistrals in their struggles to master concrete and symbolic tasks that are directly dependent on lateral preferences. We refer to the added problems in learning to read, write, spell and even speak. Since these in-

dividuals are not suffering from any special disability, it leads us to recommend that they be given added attention, and specialized remedial instructions so that they may be more effectual in carrying the double load imposed upon them by society.

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THE COMPLAINT FACTOR IN CHILD GUIDANCE

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The complaint, age, sex, intelligence, emotions and experience all operate in the individualization of children seen in clinic service. No one factor is sufficient to explain a child's behavior. Each supplements and completes the other in representation of the total child in the environment in which he is living. Evaluation of the complaint factor is often difficult and should be given serious consideration. Parents, teachers, and others become concerned or exasperated by a child's behavior and give expression to their feelings in what may be termed a complaint. These complaints do not always represent actual variations from normal behavior, but those making the complaints consider them so. Therefore a complaint is indicative of some maladjustment either in the child or in the persons immediately concerned. Through complaints we become aware of conditions that may need correction.

Everyone appreciates the futility and danger of treating merely one symptom of a physical ailment rather than the ailment itself, or of treating a person for one ailment without consideration of his health as a whole. Though not so generally recognized, this practice is just as futile and dangerous in the treatment of personality or behavior disorders. Many parents, teachers, and others in contact with maladjusted children lack either time or perspective to make a liberal study to discover the child's real problems and the essential bases for their maladjustment. The recognition of symptoms of maladjustment is very important, however, for when these are recognized by a person who is concerned about them the maladjusted individual can be directed to someone who is able to diagnose and treat his basic problem. Particularly persons in contact with children should learn to recognize symptoms of early maladjustment so that the child can be assisted with his difficulties before they become serious. People are usually disturbed by the overactive, overaggressive, or annoying child and try to do something about his problems, but the very quiet, dependent, or withdrawn child is often overlooked or even commended for his behavior.

Children are brought to the attention of child guidance clinics through complaints stated as reasons for referral. Since complaints from a single source frequently emphasize only one symptom or one phase of a condition, the approach to a problem presented in the reason for referral may be misleading. The complaint is a valuable starting point for study, however. It is helpful to gather complaints from as many sources as possible, such as from parents, teachers, physicians, the patient himself, and others who are in contact with him. As different persons observe and are concerned about different elements of adjustment and maladjustment, a more complete picture of the person's adjustment to various types of persons and environments can thus be secured. Through careful study of the complaints much can be learned not only regarding the patient but also much concerning the persons who form a part of his environment and who may play an important part in his adjustment.

Great care must be taken to guard against thinking of and treating the child as a piece of machinery, to be taken apart bit by bit, examined, repaired, and reassembled. It is difficult to avoid this in an agency working under pressure of a heavy case load. Some orderly procedure must be employed in col-

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lecting information regarding the child and his problems, but if the person making the study loses sight of the living individual, in his zeal for collecting stock descriptions of such things as his heredity, constitution, environment, traits, and reactions, the child may be seriously damaged rather than helped by such a survey.

Values gained when the total problem is recognized and treated can be illustrated by a study of several children referred to the Mental Hygiene and Child Guidance Clinic. The complaints for which these children were referred are evaluated for the purpose of demonstrating the ineffectiveness, and sometimes the irrelevancy of the descriptive element in the understanding of human relationships.

Mary, a 13 year old Negress, was referred to the clinic on a charge of incorrigibility made by her mother because she ran away from home. A description of her behavior, given by her mother at the time the complaint was made, gave the impression that the girl might be pre-psychotic. Investigation revealed that Mary does no excessive day dreaming at school, that the mother seems to reject Mary and is anxious for her to be placed in a home for children, that the father prefers an older sister, that Mary has been very unhappy at home, and that she did not actually run away though she had given the appearance of doing so. She had gone to Maryland with a family that had formerly lived near Mary's family. Seemingly, this family visited in the neighborhood and Mary told her troubles to them. They so sympathized with her that upon the father's consent they took her to Maryland with them. She was brought back from Maryland and placed in the Detention Home for Juvenile Court offenders, in order that her problems might be given more complete study. She made a splendid adjustment at the Detention Home and exhibited none of the personality disorders described by her mother. The psychiatrist reached the conclusion that "in view of the social situation, school progress, and clinical findings, including the mental studies, the child finds herself in an unhealthy social situation as a result of parental rejection, that she is free of inherent personality defects and is essentially adapatable in temperamental qualities."

Dorothy was referred to the clinic at the age of 11, because of retardation in school. At the time of referral the following information was given regarding her. "Her manner is very brusque. She is not emotional. She is very reserved." Dorothy has superior intelligence. Information received from various people in close contact with her indicate that she has extreme difficulty in her relationships with people. "She encloses herself in a shell," said one of her teachers. The clinic staff had difficulty in breaking through this shell to find the person concealed within. After a while it was realized that she felt extremely inferior and that she was suppressing strong emotion. Bases for her difficulties were found to be destructive influences in her early home life and in her relationships with members of her family. Because of her extreme reserve, a long period of treatment was necessary. There has been a noticeable improvement in her relationship with most people and in her feeling of self-confidence, and some improvement in her school work.

Charles, aged six years, was referred for examination for admission to the Colony for the Feebleminded. He was described as a very retarded child, timid and fearful, very restless, fidgety and inattentive, very much spoiled, jealous of his brother, cruel to animals, and inclined to fight with young children and to destroy their toys.

Careful testing at the clinic revealed the child to have superior intelligence but to have a reading disability. The child's problems were discussed with the school. Since the school was unable to give individual remedial instruction in reading this was given at the clinic. Because of his superior intelligence and his tendency to be cruel to other children it was felt that he might develop better relationships with other children if he were placed with a group slightly older and larger than he. He was therefore transferred to the second grade in school.

After much careful study it was felt that his personality problems were primarily based on a destructive relationship in the family setting. Since the relationship problems of parents and children were deep-seated, quite a number of psychiatric interviews with members of the family were required to develop a better relationship between them. After a year's treatment, his behavior was greatly improved both at home and at school and he was doing at least average work in the third grade at the age of seven years.

John, aged 14 years, was referred to the Juvenile Court on the complaint of his father that he was disobedient, disrespectful, and had a habit of stealing. Before arrangements could be made for him to be seen at the clinic he ran away from home. He secured a few odd jobs and slept in a truck for several nights. He was dirty and unkempt and did not have sufficient food. By the time this was reported to the Juvenile Court, John had disappeared and could not be found for several days. He was finally located and placed in the Detention Home for Juvenile Delinquents. During the two weeks he was there his problems were carefully studied by the clinic staff. This study seemed to indicate that John's behavior was partly on the basis of emotional disturbance over his mother's death two years before and partly on the basis of having to adjust to destructive home influences.

His mother's death was particularly disturbing to him because she had over-protected him and she had died suddenly in her sleep one night while he was sleeping with her. After his mother's death the father neglected him even to the point of leaving him alone in the house without food when he was quite ill. A short time after the mother's death, the father remarried. John was disturbed about having a step-mother in his mother's place, even though the step-mother seemed sympathetic and fairly understanding of the needs of an adolescent boy. The father gave the impression of being anxious to be relieved of the responsibility of caring for him. John wanted to die, he said.

Through a child-placing agency he was placed in a temporary foster home. During this period members of the clinic staff had frequent interviews with John, and with his father and step-mother. After about two months he returned to his home. He has been happy and well adjusted. Under the schedule of attitude therapy, tendencies to steal, to run away, and to truant from school have completely disappeared.

These are pertinent examples of the value of studying a child's problems from as many angles as possible. It is easy to imagine the possible catastrophes which would have resulted if these children had been dealt with only on the basis of the complaints made at the time of referral. The complaints of Mary's mother and of John's father, if taken at their face value, would probably have led to the commitment to the Industrial School of a non-delinquent girl and boy. Dorothy's abruptness and reserve were only defenses to hide strong emotions which for various reasons she was unable to express. Charles, a child of superior intelligence, was thought to be eligible for admission to the Colony for the Feebleminded. Complaints, even the most genuine, are colored by the personality and attitudes of those making the complaints. On account of emotional co-determinants, parents and others in constant contact with children may not see subtle personal relationships in true perspective. Complaints are warning signals of conditions that need attention, but they must be carefully evaluated and supplemented by a study of other factors. The children treated in this article were studied by all departments of the clinic staff, psychiatric, psychological, and social service. The work of these departments was correlated so as to give a well rounded understanding of the child and his problems.

PHILADELPHIA PSYCHIATRIC SOCIETY

On Friday, May 13th, 1938, the Philadelphia Psychiatric Society (which includes among its members psychiatrists from the eastern part of Pennsylvania), held their May clinical meeting at the Delaware State Hospital, Farnhurst.

Dinner was served to about one hundred thirty members and guests. After dinner the meeting was opened by Dr. Baldwin L. Keyes, president of the Society. Dr. Lauren H. Smith gave his usual report.

Dr. Bertrand G. Lawrence, First Senior Assistant Physician of the Delaware State Hospital, read a paper on a new method of treatment of agitated depression, prefrontal lobotomy. Dr. Francis C. Grant, of Philadelphia, consulting neuro-surgeon of the Delaware State Hospital, who performed the operation, discussed the paper. Further discussion was carried on by Dr. Seymour DeWitt Ludlum, of Philadelphia, Dr. Walter Freeman, of Washington, D. C., who introduced the procedure in the United States; Dr. J. W. Watts, of Washington, D. C., who was the first neuro-surgeon to perform the operation in the United States; Dr. Edward A. Strecker, of Philadelphia, and Dr. Clarence M. Hincks, of New York. Dr. M. A. Tarumianz demonstrated the three cases that have been operated on in the Delaware State Hospital.

The following two papers were read by title only:

Insulin Shock Therapy, a case showing unusual features, by Dr. J. K. Morrow, Senior Assistant Physician of the State Hospital, and An Unusual Case of Extradural Tuberculous Abscess, by Dr. Frederick Hemsath, Pathologist of the State Hospital.

After the clinical meeting the members of the society as well as the guests were entertained at Longwood Gardens by Mr. Pierre du Pont.

On May 2nd Dr. M. A. Tarumianz celebrated his twentieth anniversary of his connection with the Delaware State Hospital. He started as Assistant Physician in 1918, was appointed Medical Director in 1925, Superintendent in 1926, and Director of Mental Hygiene and State Psychiatrist in 1929. Prior to his coming to the United States he studied under Dr. Ziehen and Dr. Kraepeelin of Germany.

DELAWARE ACADEMY OF MEDICINE

The present series of scientific meetings at the Delaware Academy of Medicine was concluded on May 2, 1938, with a symposium on "Medical and Dental Relationships" in which the following participated:

George M. Anderson, D. D. S., Professor of Orthodontia at the University of Maryland, "Malocclusion of the Teeth;" B. Lucian Brun, D. D. S., a well-known dentist of Baltimore, "The Relation of Dentistry to Medicine;" Sidney R. Miller, M. D., Associate Professor of Medicine at the University of Maryland, "The Relation of Medicine to Dentistry."

Charles R. Jefferis, D. D. S., presided at the meeting, which was largely attended.

WOMAN'S AUXILIARY

Mrs. Augustus Kech of Altoona, national president of the Woman's Auxiliary to the American Medical Society, was guest of the Woman's Auxiliary to the Medical Society of Delaware at a luncheon meeting held on May 11th at the University Club.

In her address Mrs. Kech outlined the program of the national auxiliary and also told of the ways in which it aided and supplemented the work of the medical society. She explained several of the educational projects of the organization.

Mrs. Kech has visited chapters in 33 states during the year and will leave this month for San Francisco, to preside over the national convention, June 7 to 11.

Mrs. Ira Burns presided. The speaker was introduced by Mrs. William B. Odenatt of Philadelphia, program chairman for the eastern division of the auxiliary. She spoke briefly of the bond of friendship gained through the organization by physicians' wives.

Mrs. Robert W. Tomlinson, past president of the Delaware and the national auxiliary, also made a brief address.

Mrs. M. A. Tarumianz presented Miss Frances Palmer who sang vocal solos, accompanied by Mr. Thomas Smith.

Mrs. A. L. Heck was chairman for the luncheon, which was attended by 53 members. Others on the general committee were Mrs. Lawrence J. Jones, Mrs. George C. McElfatrick, and Mrs. Harold A. Tarrant.

The final sewing meeting of the auxiliary for the year was held on May 17 at the home of Mrs. E. R. Mayerberg. The annual luncheon meeting will be in October.

MISCELLANEOUS

Backache

THAT BACKACHE IS DUE TO:

A subluxation—says the chiropractor

A disharmony of the structures—says the Osteopath

Your uterus—says the gynecologist

Your tubes—says another gynecologist

Your prostate—says the urologist

Your gout—says the internist

Your foci of infection—says another internist

Your prolapsed intervertebral disk—say certain orthopods

Your piriformis muscle bridging the sciatic nerve—say Yeoman and Freiberg

Your coccygeus muscle—says Thiele

Your hypertrophied ligamentum flavum—say some other orthopods

Your tensor fasciae femoris—says Ober

Your erector spinae—says Heyman

Your hemorrhoids—says Jones

Your episacral lipomas—says Ries

Your intervertebral articulations—says Putti

Your articular facets—says Ghormley

Your intervertebral foramina—says Sicard

Your childhood repression habits—says the psychoanalyst

Your vertebral foramena—say Danforth and Wilson

Your sacro-iliac—says Smith-Petersen

Your lumbo-sacral joint—says Ryerson

Your radiculitis, ganglionitis, funiculitis or plexitis—says a specialist on itises

A tumor of the cauda equina—says the neurologist

Your lumbar puncture—says Pease

You fell on your coccyx—says the traumatic surgeon

Your feet need untwisting—says Mahlon Locke

Your Schmorl's nodes—says another orthopod

Your lumbar aponeurosis—says a New Yorker

Your myofasciitis—says Albee

Your posterior division of the spinal nerve—says Steindler

You have no backache — says the Christian Scientist.

—*Jour. A. M. A.*

(Ed. Note—They're all wrong! We *have* a backache, and a big one—due to heavy taxes.)

Bulls Don't See Red!

Like almost all mammals, they are color blind

I was talking to a farmer in Connecticut beside his pasture fence. A few yards away a magnificent bull was throwing clouds of dust over his back while low, discontented bellows rumbled in his throat.

"What's the matter with your bull?" I asked.

"He just doesn't like your red shirt."

"That's not it. Bulls can't tell red from any other color. All mammals except monkeys and man are color blind."

"What! Now see here, Dr. Andrews, I'll believe about anything you say—but you can't tell me that red doesn't make a bull mad. I've tried it too many times."

"Nevertheless, I'm right. A psychologist by the name of von Hess experimented with thirty bulls and he proved it conclusively. When a bull fighter used white cloth he got exactly the same results as with red on all of them.

"Moreover, experiments have been carried on with all sorts of mammals. They see shades of gray, but not colors. A cat or dog sees your room very differently from what you do. In the first place, he is looking at it from below, instead of from above. All the angles are different. The whole room is gray."

"How do they make their tests?"

"In several ways. Most frequently they use two transparent disks of different colors. When they vary the strength of the light behind them so that both disks have the same intensity, none of the dogs, cats or other mammals can distinguish between them."

"What about these dogs from the Seeing Eye, that guide blind people? They stop for red lights when crossing a street, don't they?"

"Yes, but they probably stop because the traffic and other people stop. When it moves on, they go. It isn't because they can distinguish the color of lights."

"What about birds and fish and insects? Don't they see color?"

"Yes, of course they do. Insects even see into the ultraviolet and can distinguish colors that are invisible to the human eye. Also, they can make and hear sounds we can't hear. But of all the mammals only monkeys and man can really see color.

"If you come to the American Museum of Natural History we'll show you how a room looks to a dog, how a fisherman looks to a trout and how a barnyard looks to a hen."

(Courtesy of Roy Chapman Andrews and "This Week.")

—Certified Milk, March, 1938.

BOOK REVIEWS

Mental Therapy: Studies in Fifty Cases. By Louis S. London, M. D. Two volumes. Pp. 774. Cloth. Covici-Friede, 1937. Price, $12.50 the set. New York.

These two volumes, which are essentially studies of case histories, may be of interest to the general practitioner as a means of orienting himself in the field of psychoanalysis but they do not equip him to carry on any treatment. To the psychiatrist they seem to add little to the knowledge which is already at hand. However, they are of value in familiarizing the psychiatrist with detailed psychoanalysis. The specialist, however, who is working with a frank psychosis has found psychoanalysis of very little value. The author honestly states that there is truth in this fact and that even psychoanalysis between periods of manic depressive phases does not prevent subsequent attacks. The only value in these cases lies in the ability to understand the abnormal reaction. It is generally considered that in dementia praecox, even of the milder type, such therapy may be dangerous. He is honest in his statements regarding the results of this treatment. He is quite distinctly Freudian in his attitude and both volumes seem to be a defense of the analytical technique. The volumes are well organized and the brief comments and the relative value of analysis in different types of mental disorder show an insight into the adequacy of the treatment. The greatest value, however, seems to lie in the fact that they do give a better understanding of the various abnormalities in human behavior with which all physicians are in contact daily.

Management of the Sick Infant and Child. By Langley Porter, M. D., Professor of Medicine, University of California, and William E. Carter, M. D., Director, University of California Hospital Out-Patient Department. Fifth edition. Pp. 874, with 94 illustrations and three charts. Cloth. Price, $10.00. St. Louis: C. V. Mosby Company, 1938.

This book should be in the hands of every pediatrician and general practitioner. Part I deals with vomiting, diarrhea, constipation, nutrition, hemorrhage, pain and tenderness, convulsions and syncopes, fever, cough and prematurity. Part II deals with diseases of the various systems, behavior, allergy, skin diseases and infectious diseases. Part III is devoted to method, formulas and recipes, drugs and poisoning.

It is printed on a very good quality of paper and is well bound. The illustrations and printing are excellent. It is a very practical book and up to date in all its details. The authors have succeeded in presenting, in this one volume, the essentials of the vast amount of pediatric knowledge available at the present time.

Physicians' Vitamine Reference Book. New York: E. R. Squibb & Sons.

This little handbook helps to define more clearly the various vitamines, the symptoms which may be cause d by their deficiency and names the various food products in which they occur as well as the pharmaceutical preparations placed on the market by Squibb. Although far from complete it helps the physician to orientate himself.

Opium Addicts and Addiction. By John A. Hawkins, M. D. Pp. 156. Cloth. Price, $2.50. Boston: Bruce Humphries, Incorporated. 1937

This is an intensely interesting little book, by an author who has had available a large amount of clinical material, including finally himself—with a cure of the latter. The treatment recommended is thoroughly orthodox. Written more in the style of popular educational works than that of the stereotyped text book, here is a book that physician and laymen alike may read with interest and profit, and with an increased realization of the magnitude of the "dope" problem.

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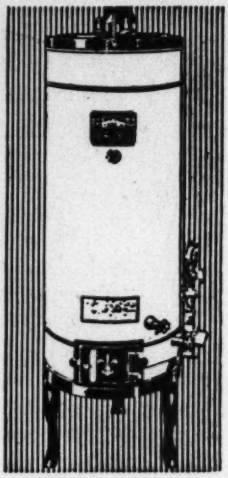

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